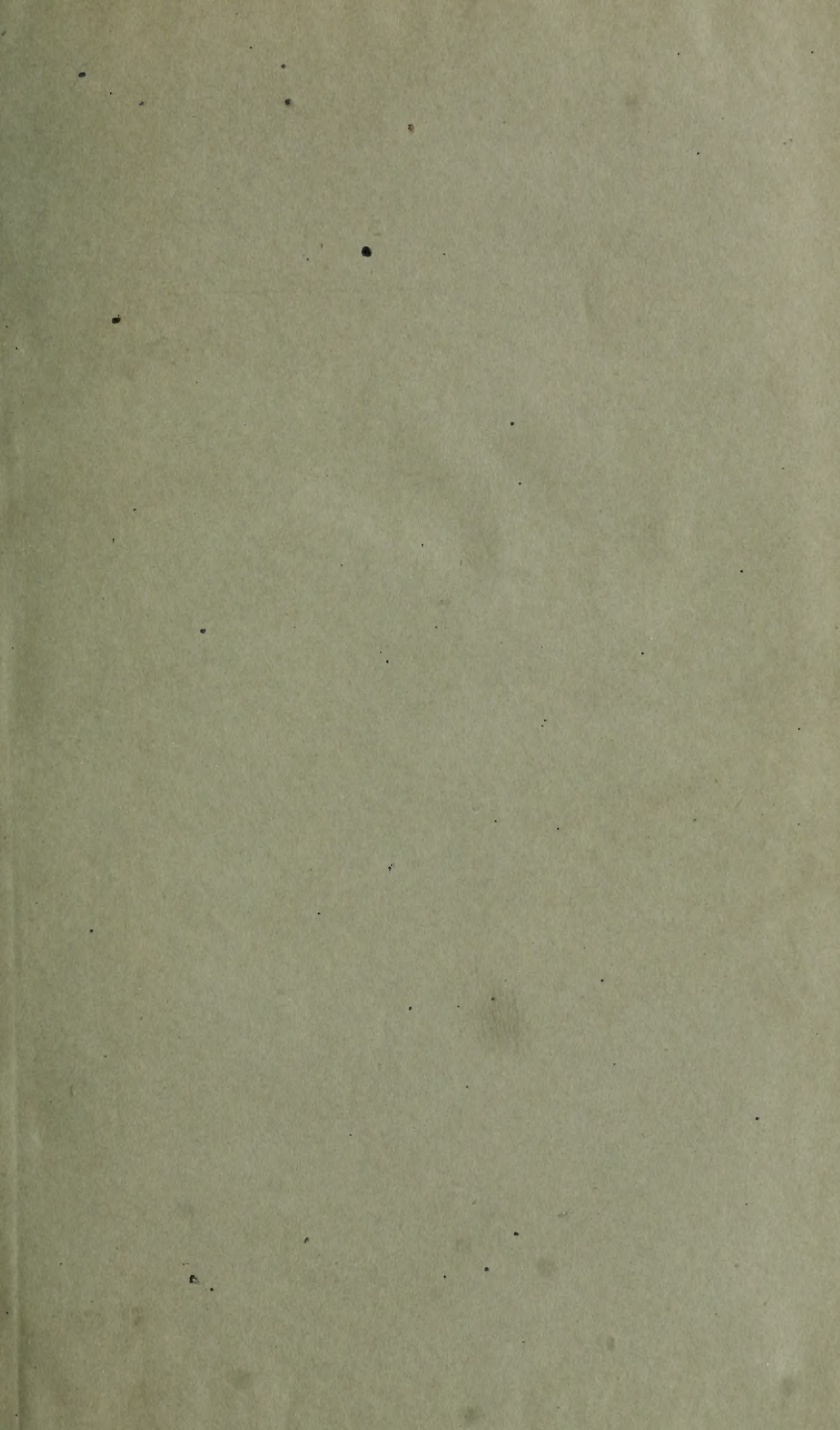


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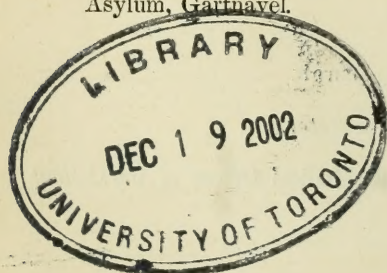
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INDEX.

A		Page
AIKMAN, J., M.D.—Recovery after Pyo-Pneumothorax, - - -	163	
AIKMAN, J., M.D.—Lymphadenoma or Hodgkin's Disease, - - -	383	
Athetosis, &c.—Case of. Dr GAIRDNER (Glas. Path. and Clin. Soc.), - -	424	
Albuminuria. Dr W. HOWSHIP DICKINSON (<i>Review</i>), - - -	396	
Albuminuria due to the absorption of Iodine, - - -	279	
Anæsthesia by Ether in Young Persons, ANDERSON, Dr MCALL.—Cases illustrative of the Curability of Tubercular Peritonitis and Acute Phthisis (Med. Chir. Soc.), - - -	128	
" " (<i>Review</i>), - - -	539	
Aneurism—Case of Double Popliteal. Dr ALEX. PATTERSON (Med. Chir. Soc.), - - -	419	
Aneurism rupturing into Thorax. Dr D. FRASER (Med. Chir. Soc.), - -	422	
Aneurism—Traumatic Axillary; treated by Syme's method. Dr E. WATSON (Med. Chir. Soc.), - - -	565	
Anophthalmos, &c.—Case of. Dr MEIGHAN (Glas. Path. and Clin. Soc.), - - -	263	
B		Page
BARR, JAMES, M.B.—Notes on Diabetes Mellitus (<i>continued</i>), - - -	166	
BARTHOLOW, ROBERTS, M.A., M.D.—A Practical Treatise on Materia Medica and Therapeutics (<i>Review</i>), - -	98	
Bloodletting—Results of Scarlatinal Dropsy treated by. Dr R. KIRK, - - -	145	
" " (Med. Chir. Soc.), - - -	261	
Books, Pamphlets, &c., received, - - -	141, 281	
Botany—Aids to. ARMAND SEMPLE, M.A., M.B. (<i>Review</i>), - - -	411	
Brain—The Motions of. WM. JAMES FLEMING, M.B., - - -	356	
Brain—Functions of. Dr DAVID FERRIER (<i>Review</i>), - - -	71	
Bright's Disease—Retinitis of. Dr JAS. FINLAYSON, - - -	445	
BRISTOWE, JOHN SYER, M.D.—A Treatise on the Theory and Practice of Medicine (<i>Review</i>), - - -	96	
C		Page
Calculus Renal—Case of. ROBERT MOFFAT, M.B., - - -	203	
CAMERON, Dr H. C.—Clinical Observations on Cases of Tracheotomy (Med. Chir. Soc.), - - -	117	
Cancer, Medullary, of Liver simulating Hydrothorax. Dr ROBERT PERRY, - -	47	
Cardiac Cases—Notes on. Dr A. WOOD SMITH, - - -	467	
CASSELLS, Dr.—"Shut your mouth and save your life" (Med. Chir. Soc.), - -	257	
CHARTERIS, Dr.—Hydrophobia (Med. Chir. Soc.), - - -	122	
China—The Diseases of. Dr JOHN DUDGEON, Pekin, - - -	174	
" " (<i>continued</i>), - - -	309	
" " On Leprosy in, - - -	453	
CLELAND, JOHN, M.D.—A Directory for the Dissection of the Human Body (<i>Review</i>), - - -	235	
CLEMENT, M. le Dr.—Treatment of Small-Pox by Cold Baths, - - -	217	
Climate, Influence of in Pulmonary Consumption. Dr CHARLES T. WILLIAMS (<i>Review</i>), - - -	230	
Clinical Studies. Sir JOHN ROSE CORMACK, M.D. (<i>Review</i>), - - -	85	
COATS, Dr JOSEPH.—Pathology of Embolism, - - -	16	
Cold Baths in Infantile Diarrhœa, - -	280	
Cold Baths—Treatment of Small-Pox. M. le Dr CLEMENT, - - -	217	
Colon—Epithelioma of. Dr GAIRDNER (Glas. Path. and Clin. Soc.), - -	429	
CORMACK, Sir JOHN ROSE, M.D.—Clinical Studies (<i>Review</i>), - - -	85	
Cut Throat with Vertical Wound. Dr JOHNSTON MACFIE, - - -	206	
" " (Med. Chir. Soc.), - - -	420	
Cysts of the Broad Ligament—Diagnosis of, - - -	276	
D		Page
Diabetes Mellitus—Notes on. JAMES BARR, M.D. (<i>continued</i>), - - -	166	
Diarrhœa, Infantile—Cold Baths in, - -	280	
" " Oxide of Zinc in. J. CRAWFORD RENTON, M.B., - - -	341	
DICKINSON, Dr W. HOWSHIP.—Albuminuria (<i>Review</i>), - - -	396	
Diffusion of Liquids and Gases. Professor Sir WILLIAM THOMSON (Med. Chir. Soc.), - - -	255	
Dislocation of the Foot without Fracture, - - -	278	
Dissection of the Human Body—A Directory. Dr JOHN CLELAND (<i>Review</i>), - - -	235	
Donkey Bite—Tendon of Flexor Longus Pollicis torn out by Donkey Bite. ROBERT PINKERTON, M.B., - - -	43	
DOUGALL, JOHN, M.D.—Two Cases of Infantile Opium Poisoning, - - -	490	
Dropsy, Scarlatinal—Results treated by Bloodletting. Dr R. KIRK, - - -	145	
" " (Med. Chir. Soc.), - - -	261	
DUDGEON, JOHN, M.D., Pekin—The Diseases of China, - - -	174	
" " (<i>continued</i>), - - -	309	
" " On Leprosy in China, - - -	453	
E		Page
Embolism—Pathology of. Dr JOSEPH COATS, - - -	16	

	Page		Page
Encephalocele—Case of. Dr ALEX. PATTERSON, - - - - -	289	Fourth Meeting, Dr GAIRDNER—Epithelioma of the Colon, &c., - - -	429
Epicanthus, &c.—Case of. Dr REID (Glas. Path. and Clin. Soc.), - - -	266	Glycosuria—Intermittent, - - -	279
Epidemic of Sore Throat. Dr D. FRASER, Paisley (Med. Chir. Soc.), - - -	422	Gonorrhœa—J. L. MILTON (<i>Review</i>), - - -	547
Epithelioma of the Colon, &c. Dr GAIRDNER (Glas. Path. and Clin. Soc.), - - - - -	429	Gunshot Wound—Dr ALEXANDER PATTERSON (Med. Chir. Soc.), - - -	121
Exchange Journals—Abstracts of. By Dr JOSEPH COATS—			
Virchow's Archiv, - - - - -		H	
Vol. LXVII., Parts I., II., 1876, - - -	103	HAMMOND, WILLIAM A., M.D.—Treatise on Diseases of Nervous System (<i>Review</i>), - - - - -	223
" " Parts III., IV., " - - -	240	HARLEY, GEORGE, M.D., F.R.S.—Histological Demonstrations (<i>Review</i>), - - -	89
Vol. LXVIII., Parts I., II., " - - -	248	HENDERSON, FRANCIS, M.D.—On the Influenza recently prevalent, - - -	502
" " Parts III., IV., 1877, - - -	549	HILL, BERKLEY, and ARTHUR COOPER—Students' Manual of Venereal Diseases, - - - - -	547
Vol. LXIX., Parts I., II., " - - -	555	Hip-Joint—Excision of, in the Royal Infirmary—Dr JAMES MORTON, - - -	493
" " Parts III., IV., " - - -	563	Histological Demonstrations—Dr GEO. HARLEY, and GEORGE T. BROWN (<i>Review</i>), - - - - -	89
Stricker's Medizinische Jahrbücher—Parts III., IV., 1876, - - - - -	109	Histology—Compendium of, Prof. HEINRICH FREY (<i>Review</i>), - - - - -	89
Parts I., II., 1877, - - - - -	412	Histology, Practical, Course of, EDWARD ALBERT SCHAFER (<i>Review</i>), - - -	89
Reichert and Du Bois-Reymond's Archiv, 1875—Parts IV., V., VI., - - -	113	Histology, Practical, Outlines of, Prof. WM. RUTHERFORD, Edin. (<i>Review</i>), - - -	89
		Histology, Practical, An Introduction to, Dr GEORGE THIN (<i>Review</i>), - - -	409
F		Hodgkin's Disease, or Lymphadenoma, Dr J. AIKMAN, - - - - -	383
FRASER, Dr D., Paisley—Epidemic of Sore Throat (Med. Chir. Soc.), - - -	421	Hydrophobia—Dr M. CHARTERIS (Med. Chir. Soc.), - - - - -	122
" Case of Aneurism rupturing into the Thorax (Med. Chir. Soc.), - - -	422	Hydrothorax—Medullary Cancer of Liver simulating Hydrothorax, Dr ROBERT PERRY, - - - - -	47
FRASER, Dr.—Nervous Disease (Glas. Path. and Clin. Soc.), - - - - -	132	Hydrophobia—A Case of Supposed Hydrophobia, Dr YELLOWLEES, - - -	213
FOULIS, Dr D.—Treatment of Chronic Pharyngitis, - - - - -	521	" " (Med. Chir. Soc.), - - - - -	422
" " (Med. Chir. Soc.), - - - - -	506	Hysteria in the Male—Dr WM. N. MACCALL, - - - - -	527
FREY, Professor HEINRICH—Compendium of Histology (<i>Review</i>), - - -	89	I	
FINLAYSON, JAMES, M.D.—Notes on Cases of Nervous Disease, - - -	345	Idiocy and Imbecility—Dr WM. W. IRELAND (<i>Review</i>), - - - - -	541
" Retinitis of Bright's Disease, - - -	445	Infantile Opium Poisoning, Two Cases—Dr JOHN DOUGALL, - - - - -	490
FOX, TILBURY, M.D.—Epitome of Skin Diseases (<i>Review</i>), - - - - -	92	Influenza recently prevalent—Dr FRANCIS HENDERSON, - - - - -	502
FOTHERGILL, J. MULNER, M.D.—The Practitioner's Hand-book (<i>Review</i>), - - -	93	IRELAND, WM. W., M.D.—On Idiocy and Imbecility (<i>Review</i>), - - - - -	541
FERRIER, DAVID, M.D., F.R.S.—The Functions of the Brain (<i>Review</i>), - - -	71	K	
FLEMING, WM. JAMES, M.B.—The Motions of the Brain, - - - - -	356	KIRK, Dr R.—Case of Scarlatinal Dropsy, Results treated by Blood-letting, - - -	145
G		" " (Med. Chir. Soc.), - - - - -	261
GAIRDNER, Dr.—Case of Athetosis, &c. (Glas. Path. and Clin. Soc.), - - -	424	L	
" Case of Epithelioma of the Colon, &c. (Glas. Path. and Clin. Soc.), - - -	429	LEGG, J. WICKHAM, M.D.—A Guide to the Examination of the Urine (<i>Review</i>), - - - - -	92
GEMMILL, SAMSON, M.B., and FRANK SHEARER, M.B.—Salicylic Acid and the Salicylates in the Treatment of Rheumatism, - - - - -	433	Leprosy in China—Dr JOHN DUDGEON, Pekin, - - - - -	453
Germ Theory applied to Disease, &c.—Dr T. MACLAGAN (<i>Review</i>), - - - - -	237	Liver Parasite—Paralytic Disease associated with—Dr WM. M'GREGOR, Fiji, - - - - -	3
Glasgow Maternity Hospital—Report - - -	274	" " " (Med. Chir. Soc.), - - - - -	260
Glasgow and West of Scotland Medical Association—Annual Meeting, - - -	272	Liver—Clinical Lectures on Diseases of. CHARLES MURCHISON, F.R.S. (<i>Review</i>), - - - - -	531
" " " List of Members, - - -	283	Lymphadenoma or Hodgkin's Disease. Dr J. AIKMAN, - - - - -	383
GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY, Session 1875-76—		M	
Seventh Meeting, Dr FRASER—Nervous Disease, - - - - -	132	MACCALL, WM. N., M.D. Cases of Hysteria in the Male, - - - - -	527
Eighth Meeting, Dr ROBERTSON—Stricture of Esophagus, - - - - -	138		
Session 1876-77—			
First Meeting, Dr MEIGHAN—Case of Anophthalmos, &c., - - - - -	263		
Second Meeting, Dr REID—Case of Epicanthus, &c., - - - - -	266		
Third Meeting, Dr GAIRDNER—Case of Athetosis, &c., - - - - -	424		

	Page		Page
MACFIE, Dr JOHNSTON. — Cut-Throat with a Vertical Wound. - - -	206	MEIGHAN, Dr—Case of Anophthalmos, &c. (Glas. Path. and Clin. Soc.). -	263
“ “ (Med. Chir. Soc.). - - -	420	MILTON, J. L.—On Gonorrhœa (<i>Review</i>). -	547
MACGREGOR, WILLIAM, M.D., Fiji. Paralytic Disease associated with New Species of Liver Parasite, -	3	MOFFAT, ROBERT, M.B., C.M.—Report of Cases in Professor MACLEOD'S Surgical Wards in Western Infirmary, during year ending 31st Oct., 1876, -	58
“ “ (Med. Chir. Soc.). - - -	260	MOFFAT, ROBERT, M.B., C.M.—Case of Renal Calculus. - - -	203
MACLEOD, Prof. G. H. B. Cases in Surgical Wards in Western Infirmary, 1876. Report by ROBERT MOFFAT, M.B., C.M., - - -	58	MORTON, JAMES, M.D.—A year's experience of Excision of Hip-Joint in Royal Infirmary. - - -	493
MACLEOD, DONALD, M.D. Case of Paracentesis Pericardii. - - -	361	MORTON, JAMES, M.D.—Some remarks on the work of Med Chir. Soc. during Sessions 1875 and 1876, -	117
MACLAGAN, T., M.D. The Germ Theory applied to Disease, &c. (<i>Review</i>). -	237	MORTON, JAMES, M.D.—The Treatment of Spina Bifida by a new method (<i>Review</i>). - - -	394
Materia Medica and Therapeutics—Practical Treatise. By Dr ROBERTS BARTHOLOW (<i>Review</i>). - - -	98	MULLAN, JAMES, L.F.P.S.G.—Notes on Obstetric Practice, - - -	45
Medullary Cancer of Liver simulating Hydrothorax. Dr ROBT. PERRY, -	47	MURCHISON, CHARLES, F.R.S.—Clinical Lectures on Diseases of the Liver (<i>Review</i>). - - -	531
Medicine—Theory and Practice of. By Dr JOHN SYER BRISTOWE (<i>Review</i>). -	96		
MEDICO-CHIRURGICAL SOCIETY—Session 1876-77.			
First Meeting—Dr MORTON—Some remarks on the work of the last two Sessions, - - -	117	N	
Second Meeting—Dr H. C. CAMERON—Clinical Observations on Cases of Tracheotomy, - - -	117	Nervous Disease—Notes on. Dr JAMES FINLAYSON, - - -	345
Third Meeting—Dr ALEX. PATTERSON—A case of Gunshot Wound, -	121	Nervous Disease—Dr FRASER (Glas. Path. and Clin. Soc.). - - -	132
Fourth Meeting—Dr CHARTERIS—Hydrophobia, - - -	122	Nervous System—Treatise on Diseases of. Dr WM. A. HAMMOND (<i>Review</i>). -	223
Fifth Meeting—Dr M'CALL ANDERSON—Cases illustrative of the Curability of Tubercular Peritonitis and Acute Phthisis, - - -	128	Nipples—On the nature and treatment of Cracked Nipples, - - -	280
Sixth Meeting—Prof. Sir WM. THOMSON, F.R.S.—Diffusion of Liquids and Gases, - - -	255	Nitrite of Amyl in Ague, - - -	278
Seventh Meeting—Dr CASSELLS—“Shut your mouth and save your life,” - - -	257		
Eighth Meeting—Dr W. MACGREGOR—On a new form of Paralysis associated with the presence of a new Parasite of the Liver, &c. Dr DUDGEON—Diseases of China, -	260	O	
Ninth Meeting—Dr R. KIRK—Cases of Scarlatinal Dropsy, illustrating the treatment of its more serious occasional results, as Convulsions, Pulmonary Œdema, &c., by Blood-letting, - - -	261	Obstetric Practice—Notes on. By JAMES MULLAN, L.F.P.S.G., - - -	45
Tenth Meeting—Dr ALEXANDER PATTERSON—Case of Double Popliteal Aneurism, - - -	419	Œsophagus—Stricture of. Dr ROBERTSON (Glas. Path. and Clin. Soc.). -	138
Tenth Meeting—Dr JOHNSTON MACFIE—Cut-Throat with a Vertical Wound, - - -	420	Opium Poisoning of Infants—Two Cases. Dr JOHN DOUGALL, - - -	490
Eleventh Meeting—Dr FRASER, Paisley—Epidemic of Sore Throat, -	421	Orthopedic Surgery and Diseases of the Joints—Lectures on. By Dr LEWIS A. SAYRE (<i>Review</i>). - - -	231
Eleventh Meeting—Dr FRASER, Paisley—Case of Aneurism rupturing into the Thorax, - - -	422		
Eleventh Meeting—Dr YELLOWLEES. A case of supposed Hydrophobia, -	422	P	
Session 1877-78—		PAGET, Sir JAMES—The Hunterian Oration, 1877 (<i>Review</i>). - - -	546
First Meeting—Dr E. WATSON—Case of Traumatic Axillary Aneurism treated by Syme's Method, - - -	565	Paracentesis Pericardii—Dr DONALD MACLEOD, - - -	361
First Meeting—Dr D. FOULIS—Treatment of Chronic Pharyngitis, -	566	Paralytic Disease associated with new species of Liver Parasite, by Dr WM. MACGREGOR, Fiji, - - -	3
Medico-Psychological Evidence—Dr ALEX. ROBERTSON, - - -	293	“ “ (Med. Chir. Soc.). - - -	260
		PATTERSON, Dr ALEX.—A Case of Gunshot Wound (Med. Chir. Soc.). -	121
		“ Case of Double Popliteal Aneurism (Med. Chir. Soc.). - - -	419
		PATTERSON, ALEXANDER, M.D.—Case of Encephalocoele, - - -	289
		Pemphigus Chronicus—Dr WILLIAM SNEDDON, - - -	54
		PERRY, ROBERT, M.D.—Medullary Cancer of Liver simulating Hydrothorax, - - -	47
		Pharyngitis, Chronic, Treatment of—Dr D. FOULIS, - - -	521
		“ “ (Med. Chir. Soc.). - - -	566
		Phthisis, Acute, and Tubercular Peritonitis—Cases illustrative of the curability of—Dr M'CALL ANDERSON, (<i>Review</i>). - - -	539
		“ “ (Med. Chir. Soc.). - - -	128

	Page		Page
PINKERTON, ROBERT, M.B.—Tendon of Flexor longus pollicis torn out by Donkey bite, - - - - -	43	Spina Bifida—Treatment of, by a new method. Dr JAMES MORTON (<i>Review</i>), - - - - -	394
Pulmonary Consumption, Influence of Climate in—Dr CHARLES T. WILLIAMS (<i>Review</i>), - - - - -	230	T	
Pyo-Pneumothorax, Recovery after—Dr J. AIKMAN, - - - - -	163	Tendon of Flexor longus pollicis torn out by Donkey bite. ROBERT PINKERTON, M.B., - - - - -	43
R		Therapeutics—A Practical Treatise on Materia Medica and Therapeutics. By Dr ROBERTS BARTHOLOW, - - - - -	93
REID, Dr—Case of Epicanthus, &c. (Glas. Path. and Clin. Soc.) - - - - -	266	Therapeutics—The Practitioners' Handbook of. Dr J. MILNER FOTHERGILL, (<i>Review</i>), - - - - -	93
Renal Calculus. Case of — ROBERT MOFFAT, M.B., - - - - -	203	THIN, GEORGE, M.D.—An Introduction to Practical Histology (<i>Review</i>), - - - - -	409
REXTON, J. CRAWFORD, M.B.—Oxide of Zinc in Infantile Diarrhoea, - - - - -	341	THOMSON, Professor Sir WILLIAM. Diffusion of Liquids and Gases (Med. Chir. Soc.), - - - - -	255
Retinitis of Bright's Disease—JAMES FINLAYSON, M.D., - - - - -	445	Tracheotomy—Clinical Observations on Cases of. Dr H. C. CAMERON (Med. Chir. Soc.), - - - - -	117
Rheumatism, Treatment of by Salicylic Acid and the Salicylates—by SAMSON GEMMILL, M.B., and FRANK SHEARER, M.B., - - - - -	433	Tubercular Peritonitis and Acute Phthisis—Cases illustrative of the curability of. Dr M'CALL ANDERSON (<i>Review</i>), - - - - -	539
ROBERTSON, ALEX., M.D.—On Medico-Psychological Evidence, - - - - -	293	" " (Med. Chir. Soc.), - - - - -	128
" " Stricture of (Esophagus (Glas. Path. and Clin. Soc.), - - - - -	138	U	
RUTHERFORD, Prof. WM.—Outlines of Practical Histology (<i>Review</i>), - - - - -	39	Uræmia—Some remarks on, &c. Dr R. KIRK, - - - - -	145
S		Urine—A Guide to the examination of. Dr J. WICKHAM LEGG (<i>Review</i>), - - - - -	92
St George's Hospital Reports—Vol. VIII. (<i>Review</i>), - - - - -	555	Uterus—Chronic Inversion of. Dr WM. A. WILSON, - - - - -	356
Salicylic Acid, and the Salicylates in the Treatment of Rheumatism—by SAMSON GEMMILL, M.B., and FRANK SHEARER, M.B., - - - - -	433	V	
SAYRE, Dr LEWIS A.—Lectures on Orthopedic Surgery (<i>Review</i>), - - - - -	231	Venereal Diseases—Students' Manual. By BERKLEY HILL and A. COOPER (<i>Review</i>), - - - - -	547
Scarlatinal Dropsy—Results treated by Blood-letting. Dr R. KIRK, - - - - -	145	W	
" " (Med. Chir. Soc.), - - - - -	261	WATSON, Dr E.—Case of Traumatic Axillary Aneurism treated by Syme's method (Med. Chir. Soc.), - - - - -	565
SCHAFER, EDWARD ALBERT.—A Course of Practical Histology (<i>Review</i>), - - - - -	89	West Riding Lunatic Asylum, Medical Reports, Vol. VI. (<i>Review</i>), - - - - -	401
SEMPLE, ARMAND, M.A., M.B.—Aids to Botany (<i>Review</i>), - - - - -	411	WILLIAMS, Dr CHARLES T.—Influence of Climate in Pulmonary Consumption (<i>Review</i>), - - - - -	230
SHEARER, FRANK, M.B., and SAMSON GEMMILL, M.B.—Salicylic Acid and the Salicylates in the treatment of Rheumatism, - - - - -	433	WILSON, Dr WM. A.—Chronic Inversion of Uterus, - - - - -	356
Skin Diseases—Epitome of, Dr TILBURY FOX (<i>Review</i>), - - - - -	92	Y	
Small Pox—Treatment of by cold baths. M. LE Dr CLEMENT, - - - - -	217	YELLOWLEES, Dr.—A Case of supposed Hydrophobia, - - - - -	213
SMITH, Dr A. WOOD—Notes on Cardiac Cases, - - - - -	467	" " (Med. Chir. Soc.), - - - - -	422
SNEDDON, WILLIAM, M.D. — Case of Pemphigus Chronicus, - - - - -	54		

DESCRIPTION OF PLATE I.

Fig. 1. *Distoma sinense*, natural size.

Fig. II. The same, much enlarged.

1. Oral extremity.
2. Stomach tubes.
3. Water-vascular system.
4. Ovary.
5. Ovarian pouch.
6. Ducts of yelk-forming glands.
7. Yelk-forming glands.
8. Uterus.
9. Abdominal sucker.
10. Testes.

Fig. III. A. Eggs, highly magnified.

B. Yelk granules.

C. Spermatozoa particles.

Fig I

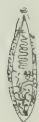


Fig II

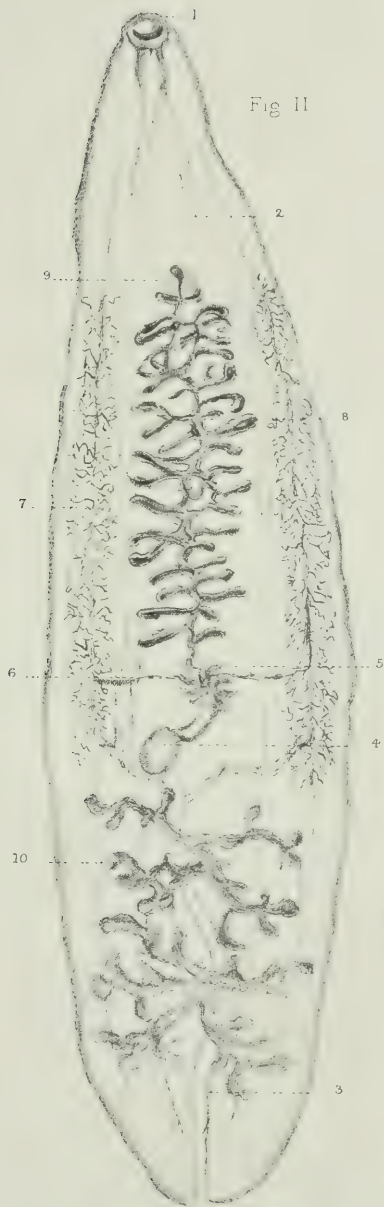
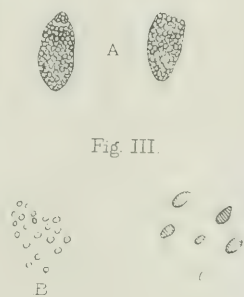


Fig III.



THE
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Original Articles.

I.—A NEW FORM OF PARALYTIC DISEASE, ASSOCIATED WITH THE PRESENCE OF A NEW SPECIES OF LIVER PARASITE.*

By WILLIAM MACGREGOR, M.D., Chief Medical Officer of the Colony of Fiji.

IN the month of July, 1874, when I took charge of half the wards in the Civil Hospital, Port Louis, Mauritius, there was among the patients then transferred to my care a Chinese who suffered from paralysis, as his diet-sheet said, from the abuse of opium. On looking into his case one was soon satisfied that the symptoms he exhibited were peculiar, different from those of any other disease generally known, while it could not be ascertained that there was any sufficient reason for supposing that his illness was in any way induced by opium. Within the next six months, eight cases of the same disease were admitted into the hospital, of which cases the following is an example:—

“Ah Koea, a Chinese, aged 27 years, admitted on the 2nd of December, 1874, says that he has been about three months in Mauritius, whither he came from his native country to act as cook and general servant for another Chinese. He enjoyed ordinary health during the voyage, and for the first

* Read before the Glasgow Medico-Chirurgical Society by Mr Henry E. Clark, Feby. 3rd, 1877.

six weeks after his arrival in the colony, but the last five or six weeks he has been unable to do any work or to use his limbs in any way. At the commencement of his illness, his legs and feet were a little swollen and painful, but it appears from his description that his joints were unaffected, while at the same time, he, to a great extent, lost the power of moving his limbs. There is also a vague account of his having had an attack of ordinary paludal fever. He says he has never eaten nor smoked opium. There is no evidence whatever of syphilitic disease past or present. He is rather thin in condition, the muscles of the legs and thighs in particular looking atrophied and feeling soft and flabby. Both his hands hang drooping from the wrist joints, and he is unable to extend his fingers or to lift his hands with the palms held downwards. When urged to put his hand in a line with the forearm, he throws up the hand with a jerk, by suddenly depressing the elbow, showing that the defect is want of muscular contraction, and that the joints are unaffected. He squeezes one's finger with considerable firmness, but not so forcibly as would be expected were his muscles in ordinary vigour. He flexes the forearm upon the arm with a moderate degree of force, but extends it again with difficulty. He lies in bed always at full length, with both legs straight, the feet everted and flexed, and their extensor muscles are completely unable to bring them at right angles to the leg. He can easily flex the leg upon the thigh, but, as he cannot extend the leg again, it remains flexed until he gradually works it down by rotating the knee from side to side. Sensation does not appear to be appreciably affected over any part of the surface. There is no paralysis of the face, tongue, or sphincter muscles. The intellect is intact; and taste, smell, and hearing unaffected. With a person on each side to steady him, when placed upright, he is able to support his own weight on his legs by bending the knee joints as far backwards as possible, so as to throw his weight on the ligaments, but as soon as the knee joint is straightened, or bent slightly forward, he falls down, unless supported. He cannot stand upon one leg, nor advance a

leg to walk. Respiration is shallow ; but nothing trustworthy can be ascertained regarding paralysis of the respiratory muscles. The abdominal muscles are soft and flaccid. The dependent parts of both lungs are dull on percussion ; and rough mucous râles are distinctly audible over the dull regions, on the application of the stethoscope. A rough systolic bruit is heard over the whole cardiac area, attaining its maximum intensity over the region of the mitral valve. Pulse 110, soft and compressible ; respirations, 24 ; temperature in axilla, $99\frac{1}{3}^{\circ}$, and in popliteal space, 99° Fah. Tongue clean, bowels constipated. Urine of an orange red colour, slightly acid ; specific gravity, 1030. Simple boiling produces no effect on it. Nitric acid and hydrochloric acid, used separately and together, produce no effect on the urine, cold or boiling. Liquor potassæ added to the cold urine gives a white precipitate that becomes slightly yellowish, and is amorphous under the microscope. Liquor ammoniæ produces a white precipitate with a delicate tinge of yellow ; under the microscope it is seen to consist of stellate crystals. Equal quantities of cold urine and nitric acid in a watch glass, surrounded by iced water, produce a crop of crystals so copious as to resemble a congealed mass. Microscopic examination of the urine and of the patient's blood detects no abnormality."

The oedema of the lungs steadily increased, incessant vomiting supervened, and the patient died five weeks after his admission into hospital.

The following I find entered, regarding this case, in my note book of post-mortem reports :—

" Dissection made about six hours after death. Venous system of pia mater congested ; brain substance rather pale, but healthy ; some old pleuritic adhesions on both sides of the chest ; dependent parts of the lungs oedematous, exuding on section large quantities of sero sanguinolent fluid ; right lung weighing 28, and left 23 ounces. Heart slightly enlarged, weighing 12 ounces ; mitral valve slightly thickened, and roughish over its surface. Stomach empty, mucous membrane congested. Kidneys congested, otherwise healthy.

Spleen distended with blood, weighing 7 ounces. Weight of liver 48 ounces; gall bladder moderately distended by rather blackish looking bile. On section of the liver large quantities of fluke-like parasites escaped from the cut ends of the bile ducts. The number of parasites present must have been very great, as all the small ducts were full of them and dilated beyond their ordinary size. Where the ducts approached the surface of the organ, especially towards its free anterior edge, they became here and there distended so as to form small sacs, some of which were over one inch long and half an inch in breadth, barely projecting above the surface of the liver, but chiefly taking the place of the gland tissue they had caused to become absorbed by pressure. These sacs always communicated with one or more bile ducts, through which the contents, consisting of numerous parasites and a small quantity of bile of a deep yellow colour, could be forced. The parasite had not found its way into the gall bladder or stomach, but several specimens were found in the small intestine, especially towards its upper part. The pia mater of the spinal cord was perhaps slightly congested, but not so much so as to indicate any inflammatory action; the substance of the cord appeared healthy to the naked eye. Nothing peculiar could be observed in the tissues of the muscles and nerves."

There was a belief that this disease had been seen for some years in Mauritius, but neither the case books nor the post-mortem report books of the Civil Hospital threw any light on the subject; in fact, I could not ascertain that a post-mortem examination of one of these cases had ever been made in the hospital. They had always been regarded as "Paraplegia from the abuse of opium."*

Eight of these cases were under my care during the six months I was attached to the hospital. In all, the history and symptoms were alike, the latter varying only in degree.

* Recently I saw a paragraph in an Australian newspaper to the effect that several Chinese had died in that country of an unknown disease, and the symptoms mentioned lead me to believe that the malady is the one described in this paper.

The patients were all Chinese, and none of them had been over six months in Mauritius, to which place they had all come direct from China. In each case the patient had enjoyed tolerable health after his arrival in the colony for a period varying from one to three months, then each had an attack, more or less severe, of fever, most likely paludal fever, to which every person living under similar circumstances would be liable. In several cases, in connection with the attack of fever, there was some account of the feet and legs having been swollen and painful, but in this it appeared that the arms and joints were not implicated. Coincident with these symptoms, paralysis of the extensor muscles gradually set in, the flexor muscles being much less affected, if at all in some cases. The feet and legs of two or three patients were slightly œdematous on their admission into hospital, but there was no pain on pressure, nor on moving the parts, nor any stiffness of the joints. In each case there was more or less œdema pulmonum, and a somewhat capricious appetite. Several of them complained of pain and discomfort in the hepatic region, but as no other symptoms of liver disease were observed during life, sufficient attention was not given to this symptom, perhaps chiefly because the patients' knowledge of Creole was not so extensive as to enable them to make themselves understood. Their bowels were constipated, with fitful attacks of diarrhoea.

Five of the eight cases observed left the hospital improved, and three died. Each of the five remained from two to three months in the hospital, and on leaving the most successful cases could walk only a little, and that slowly and with difficulty. Unfortunately, the stools of these five patients were not examined for the parasite, for two of the three fatal cases terminated only a few days before I left Mauritius; and although one of the early cases was fatal, the presence of the parasite in that case was regarded as purely accidental, and it was not held as in any way connected with the peculiar symptoms of the disease until parasites were found in the two last cases also. The history of these five patients after leaving the hospital cannot now be ascertained.

A careful post-mortem examination was made in each of the three fatal cases. The direct cause of death in each seemed to be œdema of the lungs. Two of the three had some cardiac complication—one had thickening and roughening of the mitral valve, with hypertrophy, the heart weighing 12 ounces; the other having about 3 ounces of straw coloured serum in the pericardium. To the naked eye the spinal cord, muscles, and nerves appeared healthy; and in each the bile ducts of the liver contained the same parasite in large quantity. It will give some idea of their number to mention that about 400 were collected from one case for examination, in addition to which many escaped in removing the liver, or remained in the bile ducts and intestines. I believe that nearly the same number was present in each case.

As the history and symptoms in these eight cases were identical, except in so far as the latter varied more or less in degree, and as the symptoms were peculiar and coexistent with the presence in an important organ of large quantities of a rarely occurring parasite, one naturally tries to find the relation of cause and effect between the parasite and the symptoms observed; but as it is difficult to understand why such a parasite should give rise to such peculiar symptoms, no attempt is made here to explain the connection between them, but rather an endeavour is made to shew that the symptoms did not depend on any other cause.

As the disease seems to occur only among the Chinese its cause must be sought for in whatever is peculiar in the mode of life of that people. One would most readily suggest the abuse of opium as the exciting cause; but although I have had many eaters and smokers of opium under my care, and of different nationalities, the particular disease under consideration has presented itself to my notice exclusively in Chinese. Such symptoms of paralysis have, moreover, not previously been described in the case of opium consumers. It should also be remembered that all the eight cases were new arrivals in the colony; and it is contrary to experience to suppose that the old residents do not indulge in opium, yet they do not suffer from paralysis. All the eight patients

denied eating and smoking opium, but to their declaration much weight is not attached.

It may, however, be regarded as conclusive that these eight patients were not seriously addicted to the abuse of opium, since none of them, when cut off from all supply of that article in the hospital, ever manifested any of those symptoms so well marked in opium eaters when deprived of the drug. They each refused opium in every form when offered to them, which those habituated to it never did in my experience.

As there was no reason to believe that the disease was attributable to the abuse of opium, it was easy to suppose that some lesion would be found in the spinal cord, in the anterior roots of the spinal nerves, or in the paralysed muscles. In the three fatal cases the cords were removed carefully with the roots of the spinal nerves attached, and hardened in a dilute solution of chromic acid, and sections were prepared and mounted according to Clarke's carmine process. Although this examination was undertaken in anticipation of finding some alteration in the tissue of the cord sufficient to account for the paralysis, still nothing abnormal could be detected in those preparations, although they exhibited the structure of the cord with uncommon distinctness. Beyond incipient fatty degeneration of the muscular fibre, nothing deviating from health could be detected by the microscope in the muscles or nerves. As the extensors crossing the wrist joints were completely paralysed the idea of lead poisoning suggested itself. There was no blue line on the gums, and no colic, whilst the paralysis was more extensive than in saturnine poisoning, iodide of potassium had no effect in the disease, and no trace of lead could be detected in the urine. The symptoms could not be ascribed to either paludal fever or to rheumatism, as these were very common amongst the Indians and Creoles, but unattended with paralysis.

I could not ascertain that the Chinese used as food any species of sativa, nor any variety of food known to cause paralysis.

In regarding the parasite found as in some way the cause of this disease, it becomes important to describe it, at least with such minuteness as would enable it to be recognised by observers in future. This is the more necessary, because at first I took it for the *Distoma lanceolatum*, but a drawing of the oral extremity of that parasite in Nicholson's Advanced Text Book of Zoology, has led me to believe that the animal found by me is not this species. I must premise, however, that the examination of such an organism performed by a person unskilled in the anatomy of this particular class of parasites, and cut off from books of reference and from authorities on this subject, must of necessity be deficient in many of the minuter details, notwithstanding the utmost care and labour. I have therefore requested Dr T. S. Cobbold to revise this paper in all that pertains to the anatomy of the parasite, as I have no doubt my description of it contains some grave errors. I have also forwarded a number of specimens of the parasite to my esteemed friend Dr Thomas Reid, to have careful drawings executed, and to ensure the perfect description of the parasite.

Figure I. represents one of the largest specimens drawn to the natural dimensions. It will be observed that the general shape is lanceolate. The great majority are about $\frac{1}{2}\frac{3}{4}$ ths of an inch long, and about $\frac{1}{2}\frac{3}{4}$ ths of an inch in breadth. They are flat on both sides and very thin, measuring about a fiftieth or a sixtieth of an inch in thickness. Their natural colour in the biliary secretion is very beautiful. The edges of the parasite sparkle of a delicate green tinged with yellow, and the centre is of a deep brown. In glycerine they are of a dirty yellowish white, with a dark elongated stripe in the centre.

Microscopic examination cannot be conducted satisfactorily without reagents to render the tissues more or less transparent. Glycerine and acetic acid were found serviceable, but chloride of calcium and caustic soda proved most useful; the latter, especially, dissolving away the outer covering or skin, removing the colouring matter from the yelk

granules and eggs, and making the whole organism transparent in a greater or less degree according to the time and care expended on the process; but if the alkali is used too long the specimen falls to pieces or is dissolved away entirely.

Figure II. represents an average specimen magnified about twelve times linear.

1. Oral extremity.—There is a deep, circular, cup-shaped cavity, having the proper opening of the mouth at its base. From the mouth proceeds a tube that dilates almost immediately to form a pharynx, directly beyond which the tube bifurcates, sending a division along each side to the caudal extremity, where they terminate in coecal ends without any branching or sub-division. These tubes (2) are no doubt the stomach. The contents are small, granular, usually refractive, particles.

3. The water-vascular system.—It commences at the extremity of the broad or caudal end, and after coming nearly in a line with the blind extremities of the stomach tubes, it dilates a little, and proceeds onwards in a slightly crooked course as far as nearly one third the length of the animal. It then divides into two branches, which proceed one to each side until they traverse the stomach tubes, when they subdivide into two branches, one of which proceeds forwards and the other backwards, just external to the stomach. The contents are small highly refractive particles.

The organs concerned in reproduction occupy the greater part of the animal.

4. The ovary—a dark oval-shaped body lying obliquely with regard to the long axis of the parasite, and almost entirely to one side of the median line, from a little beyond which it extends to the stomach tube. It varies in size and shape according to the quantity of its contents. Attached to its end next to the oral extremity of the animal, is an irregular sacculated pouch (5). It would appear to retain the miniature eggs until they are sufficiently developed for extrusion into the uterus.

6. Ducts of the yolk-forming glands.—They proceed

straight from the uterine pouch one to each side of the animal, and spread out into two beautifully formed bodies, the yelk-forming glands (7), situated between the stomach tube and the outer edge of the animal, on both sides, as far forwards as the neutral acetabulum and as far backwards as the ovary. Their contents are of a dark brown, but after being treated for some time with a solution of caustic soda, they become of a light red colour.

8. The uterus.—A long irregularly branched tube occupying nearly the whole space between the gastric tubes from the uterine pouch behind to the neutral sucker in front. In every specimen it has a dark brown colour from the multitudes of contained eggs. It opens externally upon the surface of a small papilla (9).

10. The two testes.—They are situated the one behind the other in the posterior third of the animal. They present a beautiful dendritic appearance that varies in its details of form in different individuals. It is very difficult to trace the course of the vasa deferentia. They seem to form a common duct, the end of which is modified to serve as an intromittant organ; but my observations on this point are not quite satisfactory.

The eggs are very small; they are seen highly magnified in Figure III., at A. They have a brown colour, which is due not to the shell or covering of the egg, but to the yelk granules. The operculum of the egg is colourless. It is situated at one end of the egg, and seems to be easily detached, as it is not seen on many eggs, even before extrusion from the uterus. Two eggs are represented at A, the one with the operculum *in situ*, and the other without it. At B some of the yelk granules are represented, and at C some spermatozoa particles. The secretions of the ovary, testes, and yelk-glands, seem to meet in the uterine pouch, and to form by their union a fully developed egg, which passes thence into the uterus.

The outer covering of the animal has a tuberculated appearance under the microscope, but has no cellular formation. Below it, or rather continuous with it, are some

layers of muscular fibre, arranged chiefly in a longitudinal direction.

Some specimens were examined under the microscope immediately on their removal from the liver, from 3 to 4 hours after the patient's death, and were observed in water, glycerine, bile, &c. They exhibited only one sign of vitality; some of them presented a constriction, forming a well marked indentation at each side of the animal, near its middle, giving it almost the form of a fiddle. This power of constriction had disappeared in all the specimens next day. It appeared to have to do with the imbibition and expulsion of the contents of the large tubes in the body of the animal, as in several specimens quantities of floating granules were observed to issue from the opening of the water-vascular system during the occurrence of the constriction, and of course a reversed current would be set up on the removal of the compression.

The quantity of eggs present in each fluke must be very great, certainly very many thousands; and if it be remembered that in each patient there were not less than 500 parasites—I believe many more—it will be seen that the quantity of eggs present in a single patient must have amounted to millions. As these were voided gradually in the excrement of the patient, it is easy to imagine that some, out of such a large number, would find their way into water, and meet with conditions suitable for undergoing the alternation requisite for their being reintroduced into the human system in the undeveloped form.

As might have been confidently expected, no miniature or undeveloped examples were met with, and there was nothing to indicate how the parasite found its way into the bodies of these Chinese. It seemed probable that they were introduced by some article of food or drink that was used only among the Chinese. As their favourite and almost only beverage is tea, it did not appear likely that the parasite was introduced in drinking. As Dr Cobbold has shown that flukes undergo part of their development in snails, and such other soft animals as they meet with in water, I was led to

examine some specimens of *bêche-de-mer*, a favourite article of diet among the Chinese, and I was rewarded by finding in these animals forms answering to the description of both *opalinæ* and *cercariæ*. Here, then, is at least a possible and simple way by which these parasites may find admission into the bodies of trepang eating Chinese. Of course, I cannot assert positively that such is really the case, but it seems very likely, as Dr Cobbold tells us that flukes are introduced into their hosts as *cercariæ*.

The subject of diagnosis and treatment may be briefly discussed. The former would be easy from the symptoms, which would lead to finding the parasite in the excrement of the patient.

I know of no satisfactory treatment. As it is not to be supposed that the parasite can continue in such large quantities for a long time in the patient, in consequence of the alternation of generations to which it is subject; and as they pass off in the excrement of the patient, it seems probable that the patient might recover if he can be kept alive for some considerable time, to give the bile ducts an opportunity of emptying themselves. The treatment adopted by me was ultimately restricted to electricity, and the administration of the triple phosphate of quinine, iron and strychnia, according to the formula in Dr Aitkin's Science and Practice of Medicine; but then I did not understand the pathology of the disease. Now, I should give in addition, chologogues, and occasional emetics, to assist in emptying the bile ducts, for it seems hopeless to administer anything with a view to the direct destruction of the parasite; and I think it very probable that the few patients that left the hospital owed their improvement as much to a diminution in the quantity of parasites present as to the medical treatment.

In connection with this subject, there is one point of great interest in general pathology that deserves special consideration. Many cases of paralysis have been described by several of our best observers as having occurred in consequence of disease of the kidneys, urethra, bladder, prostate gland, &c.; without any lesion in the spinal cord; in short, the

paralysis was reflex. But as the spinal cord in these cases was not submitted to microscopic examination, it was held by many that the cord might have been diseased without the alteration being apparent to the naked eye, and that therefore it was not proved that the paralysis was reflex. In the case of these Chinese, the spinal cords were healthy, and paralysis was well marked, complete of the extensor muscles. It might, however, be said, in regard to them, that the paralysis was not reflex, but induced by poisoning through new products generated by the parasite, or by its impeding the excretory action of the liver. In connection with the idea of the parasites producing poisoning, I ought to mention that I have always perceived a peculiar heavy, disagreeable smell about these parasites when manipulating them.

Should the agency of poison from them be thought improbable, then the paralysis must be regarded as reflex.

APPENDIX.

“The fluke described by Dr Macgregor with such care is clearly the same parasite as that recently discovered and described by Professor J. F. P. M’Connell, of the Medical College, Calcutta, in the pages of the *Lancet* for August 21, 1875. The entozoon was subsequently named by me *Distoma sinense* in the pages of the same journal; but Professor Leuckart, unaware of this nomenclature, afterwards proposed for its specific recognition the term *Distomum spatulatum*. (*Die mensch. Parasiten*; Bd. II. s. 871.) The former name must therefore be allowed to remain; and especially so since it has now been adopted by several writers on entozoa.

Dr Macgregor’s communication is of great interest, not only as affording the means of identifying the parasite, and of verifying the original discovery, but also as contributing somewhat to our knowledge of the structure of the entozoon. Exhaustive and beautiful as M’Connell’s original account is, it still leaves several points open to doubt, especially as regards the internal organs. Thus, in respect of the water-vascular system, Dr Macgregor has been able to trace the

main trunk to its place of division, and also to observe the arrangement and course of its branches. I have in my possession a large number of specimens sent to me from Calcutta, and on comparing them with two of Dr Macgregor's flukes (kindly forwarded to me by Dr Clark), I have no hesitation in pronouncing them to be identical.

T. SPENCER COBBOLD, M.D."

II.—THE PATHOLOGY OF EMBOLISM.

Being an address delivered to the Glasgow Pathological and Clinical Society at the opening of Session 1876-77, by the President, Dr JOSEPH COATS.

It has been thought by the committee of this society that it might be fitting, at the beginning of my presidency, to depart, to a certain extent, from the regular course of business, and have something in the form of a presidential address. I willingly complied with the desire of the committee, especially as it seemed to be expected that this address should not be occupied by any general discussion of the aims of the society, but rather that some special subject should be taken up and treated of more fully than it can well be in the regular course of business. This address, therefore, although taking the place of a presidential one, can hardly be called so. I trust, however, that it will not be less interesting and instructive than one of a more discursive nature.

Several subjects suggested themselves to my mind as suitable for such an address, and I have at last fixed on one which has appeared to me to be thoroughly practical, while, at the same time, there are matters connected with it which may be new to many present, and will therefore have the added interest of novelty. This subject is that of embolism, and its related subject, thrombosis. And I may say, at the outset, that from my experience in the post-mortem room, I am convinced that these processes are considerably more frequent than one would be led to believe from the importance

generally attached to them clinically. They are probably too frequently overlooked during life, although the obvious alterations which they induce must lead to serious derangements in the organs concerned.

Before entering on the definite description of the phenomena, I may be allowed to remind you of the exact significance of the terms which shall be mostly employed. Thrombosis is the coagulation of blood or fibrine within the circulation, either in veins, or arteries, or the heart. It appears that coagulation seldom occurs in the capillaries. The coagulum formed is called a thrombus, and the thrombus will, of course, obstruct the vessel or cavity in which it is formed to a greater or less extent. Embolism, on the other hand, is the plugging of a vessel by some material carried from a distance, the plug being commonly called an embolus or sometimes an embolon. The embolus will, of course, be most frequently composed of bits of thrombi which have got loose, but other material very frequently enters into their composition. Here it will obviously be the arteries and capillaries which are chiefly engaged.

In discussing the subject, I intend to lay the principal stress on embolism, chiefly because thrombosis is better understood, and there are more interesting new facts concerning embolism. But, in the first place, I must dwell for a time on thrombosis.

I.—THE PATHOLOGY OF THROMBOSIS.

Coagulation of blood in the vascular system is nearly always associated either with stagnation of blood or an alteration of the wall of the vessel. Stagnation of blood alone will not cause coagulation; there must be, in addition, some altered condition of the wall of the vessel in which the stagnant blood lies. This alteration of the wall is often a plain and palpable one. It may be a wound, and let me here remark, that if there is already a certain degree of stagnation in the veins, a very trivial wound may induce coagulation of the slowly-moving or stagnant blood. Thus it has been pointed out, that in the oedema of the legs observed in cardiac dis-

case, the punctures or incisions made to relieve the dropsy not unfrequently lead to coagulation of blood in the veins of the legs. Here, of course, there is, to begin with, a serious stagnation in the systemic veins, and the wound being superadded, coagulation is very commonly induced. Again, there are some cases occurring after delivery which illustrate this. The uterine veins are usually emptied after delivery by the firm contraction of the muscular substance of the uterus. But if this contraction is not sufficiently vigorous the blood will remain stagnant in the patent veins, and these veins opening on the surface of the uterus, which is very much in the condition of a recent wound, there will either be a continued hæmorrhage from them, or the blood will coagulate in them. We shall see afterwards that in both these cases we have a fertile source of embolism.

But a wound may produce coagulation in a different way from this. If a vessel of some size is wounded, the coagulum which forms outside the vessel may grow, by successive depositions, through the wound into the vessel, and so induce thrombosis there. This has been frequently observed in venesection, and it has often led to the condition sometimes described as phlebitis following venesection.

Another distinct alteration of the walls of vessels or the heart, inducing coagulation in them, is that produced by acute inflammation. In several of the cases already mentioned there is little doubt that inflammation has partly to do with the coagulation. Wounds are followed by inflammation, but apart from that, inflammation, especially of the lining membrane of the heart and blood-vessels, is one of the most frequent causes of thrombosis. I need only advert to the coagulation on the valves in acute endocarditis, where we have indeed a considerable roughness of the surface produced by the inflammation, and this roughness may have something to do with the coagulation of fibrine. These fibrinous coagula are always more or less present in acute endocarditis; they sometimes grow to very large dimensions, and are an exceedingly frequent cause of embolism.

Another very frequent cause of thrombosis is serious

roughening of the internal coat of vessels or the heart, the result of chronic inflammation. I shall not dwell on this subject, but only remind you of the roughness produced in chronic endocarditis, where calcareous spicula often project into the blood current, and the similar conditions frequently met with in the arteries, where also we often have calcareous plates projecting into the calibre, more especially of the aorta. In the arteries of the brain a similar affection, though it does not usually result in the formation of calcareous plates, is a very common cause of thrombosis. The thickened and irregular internal coat of the cerebral arteries often induces coagulation of blood, and the obstruction of the artery. Coagulation occurs most frequently in the smaller arteries in the sulci between the convolutions, so that softening from thrombosis most commonly attacks the convolutions, and leads to symptoms of a less grave nature than those occurring in embolism, where the larger middle cerebral, or its important central branches, are commonly involved. Then, further, aneurisms furnish instances in which a rough internal wall is associated with thrombosis, and the aneurismal clots are, you know, frequently the source of embolism.

But, in addition to all these, there are many cases where it looks, at first sight, as if the coagulation were induced by stagnation of blood alone, where simple engorgement seems to be the only cause present. We have to consider, however, that stagnation of blood in a vessel may induce serious changes in the nutrition of that vessel. There are, in the walls of most vessels, nutritive vessels, the *vasa vasorum*, but these only supply the external and middle coats, while the internal coat is apparently nourished by the blood in the calibre of the vessel. Though the endocardium possesses vessels, there is little doubt that its internal or endothelial layer derives its nourishment from the blood passing through the heart. In the cases now referred to, the nutrition of the internal coat is interfered with, and this, along with the stagnation, seems to be the cause of the coagulation. We shall see afterwards, that in the case of embolism, the stop-

page of the circulation for a few hours is sufficient to produce most important alterations in the condition of the vessel wall.

Belonging to this class, where stagnation of blood is the chief and primary condition, we have first a very common form of thrombosis in the heart. Wherever there is dilatation of the heart, from any cause, we may have the formation of thrombi, and that chiefly in the retired parts of the heart, where the blood is most at rest. Thus we find these thrombi with very great frequency in heart disease, and as in the majority of such cases it is the right side of the heart which is most dilated, it is there that we find these thrombi most frequently. But we meet with them in dilated hearts from other causes—such as bronchitis and emphysema—where it is again the right side which is dilated—in the dilatation which so frequently follows pericarditis, and so on. The thrombi here assume the form to which Lænnec has applied the name globular vegetations. These are more or less globular coagula, which are generally found in the auricular appendage, or behind the trabeculæ of a dilated ventricle, and adhere to some extent to the wall. As these coagula are prone to soften in the centre and break down, they are by no means an infrequent cause of embolism.

Then we have stagnation due to actual weakness of the heart sometimes leading to thrombosis. It appears that most of the cases which used to be described as spontaneous phlebitis are more properly cases of simple thrombosis, occurring as a result of great prostration of vitality and sluggishness of the circulation. It occurs after the severe fevers, especially typhoid, but also in states of cachexia generally. The coagulation in these cases begins mostly in the larger veins, such as the crural, jugular, cava, sinuses of the brain, and this fact seems at first sight rather in favour of the idea of phlebitis. But Virchow has pointed out that this selection of the larger veins is merely due to certain local relations. These thrombi are usually at their commencement closely related to the valves, the first coagulation occurring just in the deepest part of the sinus of the valve, where the curtain is attached to the wall of the

vein. And if we consider the weak state of the circulation in these cases, it will seem probable that the valves not being properly pressed against the walls, will remain half closed. In this case there will be a stagnation of the blood behind the curtains, and here coagulation will most readily ensue. The coagulation will generally extend up the vein, and will by-and-bye reach another valve, where a similar process has been going forward. This explains the frequently beaded form of these thrombi, the beads representing the sinuses of the valves. Cases of this kind are by no means infrequent, and the condition has been named thrombosis of marasmus, or marasmic thrombosis.

And now, before leaving this part of the subject, it is proper to state that thrombi once formed frequently grow by fresh deposition of fibrine. Sometimes the original cause of coagulation will remain; but even apart from this, a thrombus has a tendency to grow. It generally grows at least to the first large collateral branch, but often much further. Thrombi in veins generally grow in the direction of the blood current, that is to say, towards the heart. Those in the heart itself commonly enlarge by successive deposition, and this is generally indicated by the stratification which they present, each stratum representing a fresh coagulation on the surface.

I would remark, lastly, that when a thrombus has once been formed, there are two principal directions in which alterations in it may subsequently occur. It very often gets organised, that is to say, replaced by proper tissue, the circulation being thereby re-established or the vessel obliterated. Without going into any details of this process, I would remark here that by organisation I mean an actual replacement of the clot by definitely formed tissue, this tissue being connective tissue, such as we see in a cicatrix. Any mere condensation of the blood clot is not true organisation, although the term is frequently used in this loose way. I would further remark that, according to my experience, this organisation does not, as some describe, take place by means of the white blood corpuscles originally contained in

the effused blood, but that the cells which aggregate in the clot and ultimately form the connective tissue are derived from without, and gradually penetrate into and replace the blood clot.

The other change is, however, more interesting to us in its relation to embolism, and this is softening of the thrombus. Many of the coagula after a time break down in their central parts, forming a sort of grumous brown juice. This juice is for a time confined by the firmer external parts, which thus prevent the juice from escaping. But after a time the external rind may give way, and the juice be launched into the circulation. The juice contains fine granules and scraps of fibrine, and these may do no great harm in the blood, but if larger pieces have been carried off they may obstruct vessels of some size. This process of softening occurring in thrombosed veins may result in the re-establishment of the calibre, the external layers perhaps getting organised. The process, however, is most frequent in the thrombi so often met with in dilated hearts, and there it seems very often to lead to embolism, for the globular vegetation itself, when collapsed by emptying of its contents, may in whole or in shreds get detached, and so lead to obstruction elsewhere. I have only further to remark, that this process of softening is not a suppuration, although in the case of thrombosis of veins it has no doubt been often taken for this, and been viewed as confirmatory of the existence of phlebitis.

I have been induced to dwell thus on thrombosis, chiefly for a practical purpose. Where this condition is suspected we should always be on our guard lest bits of the coagula should become detached, and so cause embolism, which, as a rule, is a much more serious affection than thrombosis. The thrombi which occur in the veins of the legs are very often loose, especially the marasmic ones, and bits of them may very readily be carried off to stick in the branches of the pulmonary artery.

II.—THE GENERAL PATHOLOGY OF EMBOLISM.

Let us now turn to the topic which more especially forms

the subject of these remarks. Our knowledge of the process of embolism is in a very different position now from what it was twenty or thirty years ago. It had been a matter of frequent observation that in cases of acute rheumatism with endocarditis, there were often what were called fibrinous masses in the spleen and kidneys, but till comparatively recent times these were not related to embolism, it was rather thought that the irritating nature of the blood in rheumatism had to do with their production. It was known also that persons with heart disease were liable to sudden apoplectiform attacks, but not till comparatively recent times were these attacks related to the obstruction of the arteries of the brain by material carried from the heart. Again, it was frequently observed that in pulmonary apoplexy, as it was called, and in certain other conditions in the lungs, there were coagula in the pulmonary arteries, but it is only within the last twenty or thirty years that embolism has been supposed to play an important part in their production.

Even after these various conditions had been brought into relation with embolism, much remained unexplained. From a comparison of results it appeared that something like this is the usual course. In a case of acute endocarditis, some bits of the thrombi on the mitral or aortic valve are broken off. Some of them get to the kidney, where they obstruct one or two of the arteries. Each arterial branch supplies a more or less conical or wedge-shaped portion of tissue, and the vessels in this area soon become highly engorged. We have a wedge-shaped portion of tissue demarcated from the rest by its intense hyperæmia. But in addition to the hyperæmia there is actual hæmorrhage; the kidney tissue gets infiltrated with blood, and blood actually escapes into the uriniferous tubules, and sometimes appears in the urine. Then the blood coagulates, its colouring matter is deposited in the granular form, or absorbed, and the consequence is, that the wedge becomes pale, assuming the character of what was formerly called the fibrinous deposit. The paleness is further increased by the occurrence

of fatty degeneration both in the fibrine and the kidney tissue, so that the wedge takes on a cheesy appearance. And then a gradual process of absorption goes on, the wedge is slowly reduced in size, and in its place a cicatrix, often a very deep cicatrix, is formed; but till complete absorption takes place the remains of the wedge appear as a yellow, cheesy substance, often lying in the midst of a cicatrix. A similar process occurs when a branch of the splenic artery is the seat of an embolism.

Or take the case of a branch of the pulmonary artery. If, in any of the cases of simple thrombosis of the systemic veins already mentioned, a portion is broken off and carried through the right heart to the pulmonary artery, it will obstruct one of its branches, let us say a large one, the immediate result to the patient is usually a violent attack of dyspnœa, with, it may be, coma, and this is soon followed, in many cases, by expectoration of blood, which may be in considerable quantity. And if the lung be examined, we have again the more or less wedge-shaped portion of tissue engorged with blood, and not only so, but an actual hæmorrhage into the lung tissue, so that as you may easily prove by microscopic examination, the air cells are distended with blood effused into them.

In all these cases we have the formation of what is called now the infarctus, or infarction, this word indicating that the portion of tissue is stuffed or crammed with blood. In its hæmorrhagic stage it is often called the hæmorrhagic infarction.

Again, in cases where an artery of the brain is obstructed by embolism, there is often a simple softening of the part supplied, but perhaps in the majority of cases actual punctuate hæmorrhage occurs.

If we contrast with these observations the fact that embolism of certain other parts is usually accompanied by no very special symptoms or changes in the tissues, we shall be led to conclude that some special conditions must be at work in these parts. There is no doubt that in acute endocarditis the arteries of the limbs and of the skin are plugged just as

often as those of the kidneys and spleen. We know that where, as in pyæmia, the plug is of a specially infective nature, the resulting metastatic abscesses are frequent enough in the muscles and in the skin, &c.; and there is no doubt that when emboli of a simple nature are circulating in the blood, a certain proportion of them will go to these parts. How, then, are we to explain the fact, that in certain positions embolism is usually a comparatively innocent process, but in certain others one accompanied by such serious results?

Some of these phenomena are explained by the fact, that in the four organs named the arteries do not anastomose, or do so to a very slight extent; but this does not explain the occurrence of engorgement and the hæmorrhage; in a word, the hæmorrhagic infarction.

In order to explain this, a series of very beautiful experiments has been devised by Cohnheim, and as these are here of special interest, I propose to enter, with some detail, into them. The experiments were made on the tongue of the frog, for this organ can be spread out in the living animal and the processes going on in it actually observed as they develop.

The tongue of the frog is, as you know, an irregular parallelogram, and it is supplied by two main arteries, which run longitudinally at a certain distance from each other. These arteries anastomose pretty freely towards the tip of the tongue, but hardly at all elsewhere. They give off lateral branches almost entirely outwards, and some of these lateral branches anastomose, while some do not. For convenience of description Cohnheim calls the arteries which do not anastomose end-arteries; they break up into capillaries, but as arteries, they have no communication with neighbouring arteries. These lateral branches, then, are some of them end-arteries, some of them not.

I need not describe the method which this author uses to produce embolism: suffice it to say, that he introduces little pellets of wax into that compartment of the aorta which furnishes the branches that go to the tongue. The

pellet of wax is blackened before being introduced, so that it can be recognised in the vessel as a black plug. Now, the immediate result of plugging of the vessel is, of course, a stoppage of the circulation in the vessel, and, to a certain extent, in its branches, and this state of rest is permanent in the artery on to the first branch on either side of the plug. Whatever happens afterwards, this portion of the vascular system—the part of the artery, that is to say, between the two nearest branches above and below the plug—is lost permanently. It is the same in the case of a capillary vessel: if it be plugged, the portion occupied by the plug, and onwards to the first branch on either side, is out of the circulation, and it only contains stagnant blood plasma, and a few white corpuscles, but no red ones. Along with this stoppage of the circulation in the artery and its branches, there is in neighbouring arteries an increased activity of the circulation, a collateral fluxion, but this does not need to concern us much here. The primary and important result at the very outset is the stagnation of blood in the branches of the artery which has been plugged. A most important difference exists in the further course, according as the artery has an anastomosing branch beyond the plug or not, whether, that is to say, it is an end artery or not. If it is not an end-artery the course is very simple. The stagnation which at first existed in the arteries either does not extend to the capillaries and veins, or does so very temporarily. The circulation is gradually re-established in all the vessels by the anastomosing communications. The blood may move more slowly for a time in the area of the plugged artery, but there is no other obvious lesion, except that the small portion of artery actually plugged is virtually lost to the circulation.

It is very different where the artery plugged is an end-artery, or where the anastomoses have been simultaneously plugged. In this case the stagnation rapidly extends, not only to the arterial branches, but also to the capillaries and corresponding veins. The blood in all the vessels of the entire area is at rest, and this area will, in correspondence

with the distribution of the artery, have a triangular shape. Sometimes the vessels are filled with the entire blood, including liquor sanguinis, and red and white corpuscles, but sometimes the red corpuscles seem to have been, as it were, swept out of the vessels, and there are only colourless liquor sanguinis and white corpuscles left. The explanation of this seems to be that in certain cases the plugging is sudden, and in others more gradual. When it is absolutely sudden then the entire blood remains at the halt in the whole area—in arteries, capillaries, and veins. If the plug does not at first fit into the vessel, so that for a time the circulation goes on to a certain extent past the side of it, and it may be the plug itself is rolled slowly forwards in the vessel, in that case the circulation will be very slow in the area, and few blood corpuscles will get past the plug. But the slowly moving plasma will carry forward the corpuscles already in the vessels, the red ones most easily, because the white corpuscles, being softer and more adhesive, tend to linger behind. In this way we may have a pale fluid lying in the vessels of the triangular area, and by-and-bye this fluid is brought to a complete state of rest when the plug fixes itself and completely occludes the vessel.

So far the area affected has either the whole blood or the blood plasma in its vessels in a state of rest. But soon there begins a new movement of the blood, a movement, however, in a direction opposite to that of the normal circulation. A backward current sets in from the neighbouring veins, and this current begins at the point where the vein from the affected part communicates with a branch in which the circulation is still active. This backward flow will be most distinct in cases where the vessels only contain blood plasma, the corpuscles will be seen forcing their way into the midst of the clear fluid, but the movement will also be visible where the vessels contain the entire blood. This backward movement goes on till the whole vessels in the area are engorged with blood. When the engorgement has taken place, then by-and-bye begins a slow to-and-fro movement in the blood. In this way the vessels of the part get crammed with blood in the course of

a few hours, and the portion of the tongue affected is demarcated in the form of a dark red wedge.

This backward flow of the blood is not difficult to explain. When the artery is plugged, the force of the heart is cut off from the blood in the vessels concerned, the pressure from behind is therefore reduced to nothing. But the pressure in the neighbouring veins, although not so great as in normal arteries, is still something, and is therefore above that in the vessels of the affected area, and so a movement begins in the backward direction, till the pressure is equalised, the force which carries on the circulation in the open vessels being counterbalanced by the distension of the closed vessels and friction of their contents. In a similar way is explained the fact which Cohnheim seems to have overlooked, that blood passes into the part, not only from its vein, but also from the capillaries of neighbouring parts. There is, as has been already mentioned, a fluxionary congestion around, and the blood in the capillaries will be at a higher pressure than normal; and will readily soak through into the capillaries of the plugged area, and add considerably to the engorgement. This omission of Cohnheim has been recently supplied experimentally by Kossuchin.

The next stage in the process is the occurrence of hæmorrhage. In the course of time the blood corpuscles begin to slip out of the capillaries into the surrounding tissue. It is not a considerable hæmorrhage at a particular point, but a kind of leakage from the capillaries at certain parts, a process generally called diapedesis. It is chiefly the red corpuscles which thus escape, but white ones do also to a certain extent. As the corpuscles escape the tissue of the tongue gets infiltrated with them, till the affected area looks like a clot of blood, having the characteristic wedge shape. Here then is the complete hæmorrhagic infarction.

It may here be remarked as of some consequence in relation to our subsequent considerations that when a very small artery is plugged, even though it be an end artery,

these changes do not occur ; and also that it is very rare for hæmorrhage to take place when a capillary is plugged. It only takes place in capillaries when the embolus shifts after it has been for a time in one place, which, from the uniform size of capillary vessels, it is very apt to do.

And now, what is the explanation of this hæmorrhage ? It is not to be accounted for in the same way as the backward flow, because the blood in the vessels is at a pressure little if anything higher than that of the veins from which the pressure is propagated, and we know that the blood pressure in veins is comparatively small. How then are we to account for this process of leakage through the capillaries, the diapedesis ? The explanation seems to be that the simple cutting off of the circulation from the vessels so seriously interferes with their integrity that they are no longer in a position to prevent the escape of the corpuscles. It is not a rough or very visible lesion of the wall of the vessel, but rather a fine derangement of its function of such a nature that, though not distinguishable to the naked eye, the lesion has rendered the vessel no longer fit to carry on the circulation.

I need not enter into the various experiments which have been made to elucidate this point. Cohnheim has, in numerous instances, and in different animals, shut off the circulation by ligature for various periods of time, and then let it on again by loosening the ligature ; and he has found that, according to the length of time during which the ligature is left on, there is more or less serious interference with the function of the vessel. To give, very briefly, a single example. The ear of the rabbit is a very convenient object for experimentation. If a cork be put inside the concha, the ear can be readily ligatured around it. The result depends on the duration of the ligature. If it has only been a few hours, then after its removal the circulation returns, but the vessels are all dilated, and the ear fiery red ; the vessels, however, gradually contract, and the ear returns to the normal, except perhaps some œdema at the seat of ligature. But if the ligature has been left on longer, for a

period of hours from six to fifteen, or in rare cases twenty-four, there is at first a similar dilatation of the vessels and redness, but this redness does not disappear so soon, and when it does get less, this depends not on contraction of the vessels, but on the occurrence of œdema. The œdema sometimes reaches a high degree, and along with the fluid which is exuded from the vessels and constitutes the œdema, microscopic examination proves the existence of a great number of white blood corpuscles which have escaped from the vessels. This œdema may disappear pretty quickly, but in severe cases it may last several days, and desquamation of the epithelium may occur along with it. But if the ligature has been kept on still longer, in most cases for a period of twenty-four hours, hæmorrhage results when the ligature is removed. There appear at first spots and lines of hæmorrhage, but these coalesce till the ear has finally the homogeneous dark red appearance of the hæmorrhagic infarction. When this has occurred the ear is virtually dead, it sloughs or mummifies and separates. The vessels, in fact, are so near dead when the ligature is loosed, that the circulation can no longer be restored.

Let us now bring together the results deducible from these experiments. It seems that when the circulation is cut off from a part, so that fresh blood is not supplied to its blood-vessels, these vessels undergo some change which seriously affects their relations to the contained blood. If the stoppage of the circulation has been for a very short period of time, there may be a simple temporary paralysis of their walls, so that when the circulation returns they are dilated by the pressure of the blood. But if the circulation has been stopped for a longer period there is something more than this simple muscular paralysis, the vessels allow of the escape of a much larger amount of plasma than occurs normally, and along with the plasma white blood corpuscles pass out of the vessels, a condition in fact closely akin to inflammation. But if the circulation has been still longer stopped, there may supervene a condition in which

the vessels have apparently lost their functions altogether, they allow both red and white corpuscles to escape into the tissues around, and that, too, while the pressure in the vessels is very small.

This last is the condition in the case of embolism of an end artery. The integrity of the vessel, because of the cessation of the circulation, is so seriously interfered with that the blood corpuscles leak through the wall, and as the vessels have, with certain exceptions, been previously over-filled and engorged with blood, the escape of blood is now very considerable. It is also to be remarked that a part so affected is virtually lost to the organism. In the case of an external part like the tongue of the frog, the part sloughs and comes away in this manner; but in certain other parts the mode of disposal may be different, as we shall afterwards see.

III.—THE RESULTS FOR HUMAN PATHOLOGY.

It is time now that we should carry these results to human pathology, and trace the course of events in cases of embolism there; and in the first place it will be expected, from what has gone before, that the important changes we have been considering will not occur where the arteries freely anastomose. We know, for instance, that the arteries of the extremities anastomose freely, and I have already remarked that embolism of these vessels is seldom followed by any serious consequences. There are cases where, however, embolism, in the legs especially, leads to serious results; where, for instance, the emboli have been numerous and a large number of vessels obstructed. In such case an artery may be converted, as it were, into an end artery, and the consequences will be gangrene of the part supplied. In cases, also, where the heart's action is very weak, the plugging of a single vessel in a lower limb may suffice to produce stoppage of the circulation in the area supplied, the heart being too weak to drive the blood round through anastomosing vessels with sufficient force. But where an artery of an extremity is plugged, even though it be in the

condition of an end artery, there will not develop anything analogous to the hæmorrhagic infarction; and the reason of this is, that the veins of the extremities are furnished with valves at comparatively short intervals. We saw that the engorgement of the part and the ultimate hæmorrhage were mainly due to a backward flow of blood from the veins, but if the veins are furnished with efficient valves then there can be no such backward flow. Accordingly, in the cases under consideration—that is to say, where the plugged artery of an extremity is in the position of an end artery—there will occur necrosis or gangrene, but no engorgement or hæmorrhage.

But besides the presence of valves, other circumstances may interfere with the backward flow of blood from the veins. For instance, if the blood coagulates in the veins, there can be no such occurrence. Further, if there is great weakness of the heart, then the pressure in the vessels as a whole may be so low that no backward current occurs when the artery is obstructed. Again, if the obstruction has been gradually brought about, if the plug has not at first fitted the vessel, there will be for a time a slow circulation through the part, and during this period the walls of the vessels may have so far lost their integrity that no backward flow is possible. The position of the body may also interfere, the blood being prevented by the action of gravity from flowing backwards in the veins. But again, the capillaries, if exceptionally wide, may act as anastomosing vessels, and so prevent the occurrence of the hæmorrhagic infarction; and we shall see that this is especially the case with the lungs. It will be clear from this, that in order to understand the results of embolism in the various organs it will be necessary to consider carefully the relations of these organs. There are, however, only five or six organs which possess end arteries, and we may, with one important exception, confine our attention to these. The organs are these—the lungs, the kidneys, the spleen, the brain, the retina. We have, for a reason which I shall afterwards point out, to add to these the superior mesenteric artery.

IV.—THE SPECIAL PATHOLOGY OF EMBOLISM.

Let us, then, in the first place, consider the results of *embolism of the pulmonary artery* and its branches. We have seen in the earlier part of this address that thrombosis is by no means infrequent in the systemic veins and in the right side of the heart. If after a fever a marasmic thrombus has formed in the veins of the calf, and a portion is transported to the right side of the heart and thence to the pulmonary artery, there will be embolism of that artery. Or if from the veins of the uterus, which by the process already referred to have become filled with clot, a piece of this clot is carried forward, it will finally obstruct a larger or smaller branch of the pulmonary artery. Or if in an oedematous leg, with or without incision, thrombosis occurs in the veins, nothing is more probable than that portions of the thrombus will be carried forward. And, again, in cases of dilated heart, globular vegetations are likely to be formed and to break down, in which case the branches of the pulmonary artery will become the seats of embolism. Then, further, tumours occasionally, either by pressure cause thrombosis of the veins, or actually perforate through their walls, and in the one case portions of the coagula and in the other bits of the tumour may be carried forward to the pulmonary system.

These accidents are very frequent, and it is well that in the various circumstances mentioned we should be on the look-out for them. If a large branch of the pulmonary artery is thus obstructed, the results are often very serious. A large portion of the respiratory surface is suddenly cut off, and the system being completely unprepared for it, there may be a sudden and sometimes a fatal collapse. Many of the sudden deaths after delivery seem thus to be accounted for—the patient makes some unusual exertion, such as the first movement of the bowels after the confinement, and the pressure of the abdominal muscles sets loose large pieces of clot, which go to obstruct the pulmonary artery. But short of fatal collapse, such a sudden obstruction of a large vessel will lead to an attack of coma, so deep that the case may be taken for one of apoplexy. This symptom is due to the in-

sufficient supply of arterial blood to the brain, which has been found after death highly anæmic in some of these cases. In less severe cases there may be little beyond a rigor and a transient giddiness or faint. These symptoms are followed by violent dyspnœa, so violent sometimes as to be most distressing to see. We cannot explain the dyspnœa simply by supposing that there is not enough respiratory surface left through which the blood still flows. We know that, if gradually brought about, much larger portions of lung tissue may be put out of use without nearly such severe symptoms. It is because the obstruction is so sudden, and the system is therefore unprepared for it, that the consequences are so serious. We may compare it in this respect with the violent dyspnœa met with in pneumothorax, where there may be an equally sudden loss of function of a large portion of lung. By-and-bye, the system accommodates itself to the reduced respiratory surface, and in the course of a very few days the dyspnœa disappears. I suppose this is effected by a dilatation of the arteries and a strengthening of the heart's action, as well as by a reduction in the activity of the organs, so that while an increased quantity of blood is passed through the reduced circulatory area in the lungs, there will be a less active demand for arterial blood by the organs.

As a set-off to these more extreme cases, where a very large branch of the pulmonary artery is obstructed, we have to take into consideration those cases where only small branches are concerned. In these there seem to be few symptoms at first—it may be only a rigor and a slight or transient dyspnœa. But in both cases the after symptoms will differ, according as the hæmorrhagic infarction forms or not.

The pulmonary artery and its branches are apparently complete end-arteries; they have no anastomoses as arteries, either among themselves or with the bronchial arteries. But yet, as a matter of fact, embolism of the pulmonary artery does not always produce the hæmorrhagic infarction; it does so in many cases, but perhaps not even in the majority of them. There are several reasons for this, and they seem to

give a perfectly satisfactory explanation of the facts. It is to be remembered that the lung is supplied by two systems of vessels, mainly the pulmonary artery, but also the bronchial arteries. When a branch of the pulmonary artery, or even the whole artery is obstructed, blood will still come to the lung through the bronchial arteries, which you know are branches of the aorta, or intercostal arteries. These vessels supply arterial blood, not only to the bronchial tubes, but also to the connective tissue of the lungs, and to a certain extent to the larger branches of the pulmonary artery, which they supply with vasa vasorum. After the obstruction of the pulmonary artery, therefore, the bronchial artery will, to a certain extent, prevent that interference with the integrity of the vessels in the lung tissue, which is the more direct cause of the hæmorrhage. But besides this, the capillaries of the lung are somewhat different from those of other parts. They are wider, and nearer to the ventricle which drives the blood than capillaries of other organs. Then the movements of respiration are of great assistance in carrying on the circulation through the capillaries. So that though the arteries do not anastomose, yet the capillaries will to a certain extent keep going the circulation; will, in fact, take the place of anastomoses. The circulation in the portion of lung supplied by the obstructed artery will be slow, but it may be sufficient to keep up the integrity of the capillary walls, and so prevent engorgement and hæmorrhage. This has been very beautifully established by some experiments of Cohnheim and Litten, which I have not time to describe here. They injected a colouring material into the circulation of living animals, after they had produced embolism of branches of the pulmonary artery by introducing solid bodies into the veins. They found that behind the emboli the colouring matter was much less abundant than elsewhere, but was not absent, thereby proving that the circulation was slower, but not stopped. In strong, vigorous animals, then, embolism does not, except occasionally, produce the hæmorrhagic infarction in the lungs, because in them the circulation is carried on to a certain extent behind

the embolus, and the capillaries are nourished. But where the animal is not vigorous, and where especially the heart is weak, then embolism will be much more likely to produce the hæmorrhagic infarction, because the blood will not have enough force to pass through two sets of capillaries, and this will also be the case where there is to begin with some obstruction to the pulmonary circulation.

And if we recur to the circumstances under which embolism of the pulmonary artery is most common in man, it will appear that these latter conditions are very often present. Perhaps the most frequent source of the embolus is the globular vegetation of the heart, and this occurs in the dilated and imperfectly acting right heart. It is often associated, too, with disease of the mitral valve; and this, as you know, nearly always leads to obstruction to the pulmonary circulation. In cases of oedema of the legs from heart-disease, the venous engorgement which leads to the oedema is reflected from the mitral orifice through the lungs, where the circulation is highly retarded. In convalescence from fevers, and after delivery, we have the heart weak and the circulation slow. Thus it happens that embolism of branches of the pulmonary artery in man produces the hæmorrhagic infarction very frequently, while experimental embolism in healthy animals does so much more rarely. One should expect that the penetration of a tumour through the wall of a vein, and the occurrence of embolism in the lung by this means, would not, if the patient were a comparatively strong man, be so likely to produce the infarction, unless, indeed, many branches were simultaneously obstructed; but I have no cases to offer in illustration of this.

Certain facts in connection with the relations and situation of the infarction of the lungs are of interest in this regard. The apex of the wedge-shaped infarction (as has been again and again remarked) is generally some distance beyond the seat of the embolus. This seems to mean, that the portion of tissue near the obstruction is surrounded by vessels in which the circulation is normal, and being, as it were, at the apex of the wedge, there is a comparatively

narrow portion of lung to supply, and so the surrounding capillaries suffice; whereas, deeper in the wedge the blood cannot penetrate through the thick portion of tissue. Then, again, it has been often noted that the infarction is nearly always at the periphery of the lung, and we may explain this on a similar principle. If a deep artery is occluded, the area supplied by it will be as it were buried in tissue, in which the circulation is active, and will have normal capillaries on all sides, ready to supply it with blood. At the periphery, on the other hand, the base or widest part of the area is at the pleura, and there are no capillaries here to furnish blood. And I have often observed, further, that the infarction is very frequently at an edge of the lung, or both at an edge of the lung and the edge of a lobe, in which case not one but two or three surfaces will be beneath the pleura.

Pulmonary embolism, then, commonly, but not always, produces the hæmorrhagic infarction; and it may produce all the primary symptoms of embolism without leading on to the infarction. For the circulation may be so much retarded as to cause a serious reduction of the respiratory surface without being sufficiently interfered with to cause engorgement and hæmorrhage.

I need not do more than briefly describe the hæmorrhagic infarction of the lung. It is a more or less wedge-shaped portion of tissue, which is completely condensed, is firm to the touch, and on section looks like a clot of blood in the midst of the lung tissue. This appearance originally suggested Lænnec's name for it, pulmonary apoplexy. Blood will be found filling all the air spaces of the affected portion; air vesicles and bronchial tubes are crammed with blood corpuscles. The pleura over the infarction is nearly always coated with a thin layer of fibrine, and there is fluid in the pleural cavity. The portion of lung tissue almost never recovers. It is just possible that the blood may be discharged and the circulation return. The most fortunate issue is that the tissue contracts gradually to a cicatrix, which remains pigmented from the blood colouring matter. In

other cases there may be softening and even gangrene of the affected part.

And now, very briefly, let me refer to the symptoms which accompany this formation of the hæmorrhagic infarction of the lung. These and the diagnosis are very well described in a clinical lecture by Gerhardt, in Volkmann's series, which will soon be published by the Sydenham Society. After the sudden attack of fainting, or dyspnœa, or shivering, there supervenes in a day or so hæmoptysis, which is the most direct evidence of the existence of the hæmorrhagic infarction. The amount of blood expectorated varies very much, and it is often mixed with mucus or muco-pus. The temperature is in a few cases elevated, and though the elevation is generally slight, it may be pretty considerable. The infarction will produce dulness on percussion, and in this relation it may be noted that the embolus must frequently seek the lower lobe, and that the right is more frequently involved than the left. In addition, the infarction is generally followed by pleuritic effusion, which will still further increase the dulness, or give rise to a new dull area. The pleuritic effusion is generally more extensive than that which goes along with pneumonia. These signs have, therefore, much in common with those of pneumonia, and it may require some care in the individual case to make the diagnosis.

In the other organs in which we have still to study the process of embolism, the arteries belong to the systemic system, and hence the source of the embolus is pretty nearly the same for all. Leaving out of view cases of septic origin, the most important condition leading to embolism is acute endocarditis, and next to it, chronic endocarditis. In the former, fibrine is always deposited on the borders of the valves, and is liable to be washed off. In the latter, the valvular structures frequently become brittle, and bits of them may be broken off and carried to a distance, or in this case, too, fibrine may be deposited on the roughened surface. Again, in cases of dilatation of the left ventricle and auricle, globular vegetations may exist in one or both of these cavi-

ties, and afford a source of embolism. Lastly, in the cases of chronic endocarditis and aneurism, we have frequent causes of embolism. It is well to bear these possible sources in mind, in order that we may be able to draw on them as aids to diagnosis.

Embolism of the cerebral arteries generally produces, as you are aware, symptoms hardly distinguishable from those of apoplexy. But the lesion in the brain is not at all that to which the name apoplexy is specifically given. We have not here an extensive hæmorrhage, but a softening of the brain substance in the area concerned, either with or without a partial hæmorrhage; there is no large clot, as in sanguineous apoplexy. So that although pulmonary apoplexy is associated with embolism, cerebral (hæmorrhagic) apoplexy is not. The arteries of the brain beyond the circle of Willis are nearly free from anastomosis—are nearly end-arteries, and they approach nearer to this type the further we proceed out from the circle of Willis, so that obstruction of an artery, if complete, will necessarily lead to destruction of the portion of brain substance normally supplied by the artery, and this destruction takes the form of softening. If the backward flow occurs in the veins, we shall have hæmorrhage, but the tissue of the brain being so friable, there will be no consistent infarction such as we see in some other organs. At most, we shall have blood mingled with brain substance and the softening will be a red softening. The circumstances of the circulation in the brain are somewhat peculiar, and many of the conditions which interfere with the backward flow in the veins may come into play here. The veins do not in their distribution follow the arteries, and they are so circumstanced that gravitation may seriously interfere with the backward flow. Then, further, the delicacy of the vessels in the substance of the brain, and their small size, will interfere with the backward flow, for we must remember that we have here to do with a process in the actual substance of the brain which is undergoing disintegration. Whatever may be the causes, embolism of the brain frequently produces its effects without considerable hæmorrhage.

It is of importance to remember that the embolus in the vast majority of cases finds its way into the middle cerebral artery or one of its branches. I shall not stay to discuss the probable reason of this, but shall only point out that this is the chief artery of supply for the great central ganglia, the thalamus opticus and corpus striatum as well as the motor region of the hemispheres, and so it happens that embolism so frequently leads to serious and permanent paralysis, the softening having its seat in these important centres. The softening which results from *thrombosis* of the arteries has no special tendency to occur here, and so we have more frequently softening of the convolutions from this cause, and the symptoms are therefore much less severe. I may add that the left middle cerebral is more frequently the seat of embolism than the right, and so right side paralysis is most common.

Embolism of the branches of the splenic artery appears to produce the infarction almost if not quite invariably, and the formation of the infarction is accompanied by enlargement of the spleen, and very often a localised peritonitis. Where, therefore, in a case of endocarditis, an enlargement of the spleen is found, and especially if friction is detectible in the same region, the existence of a hæmorrhagic infarction may with probability be diagnosed. The formation of the infarction has been in some cases observed to be accompanied with fever, but it is not known whether this is commonly the case.

In the kidneys embolism is commonly followed by the hæmorrhagic infarction, but there may be instead a simple degeneration or death of the area involved. The arteries of the kidney are almost absolutely end-arteries. If you inject a branch of the renal artery you will find that the material runs to a quite definite area of tissue, the area supplied being abruptly demarcated from neighbouring parts. The cortex of the kidney is much more nearly related to the arteries than the pyramids. The principal arteries run along near the bases of the pyramids, and give off their larger stems upwards into the cortex. Hence in the case of small

emboli, it is the cortex which is usually the chief seat of the infarction, the infarction has its base at the surface, and its apex at the base of a pyramid, or deep in the cortical substance. The infarctions are sometimes very large, and may involve nearly half the kidney, in which case they are not confined to the cortex. In some cases hæmaturia has been met with soon after the occurrence of embolism, but this appears to be by no means constant. And if we consider for a moment the condition of parts we shall not be astonished at this. The artery is obstructed, and hence the secretion of urine is virtually at a stand-still in the area concerned. The backward flow from the veins will not probably yield sufficient pressure to give a supply of urine, or even perhaps to cause much escape of blood into the uriferous tubules. We should look for the blood rather in the interstitial tissue outside the tubules. The blood which appears in the urine comes probably as much from the parts of the kidney where there is collateral hyperæmia as from the infarction itself. There is no good reason to suppose that the infarction sets up a true nephritis or leads to Bright's disease.

In the case of the *superior mesenteric artery*, embolism very often leads to the formation of the hæmorrhagic infarction, the chief symptom being severe hæmorrhage from the bowels. And yet the superior mesenteric is not an end artery, it has abundant anastomoses, and so have its branches. There appears in this respect to be here a serious exception to the rule deduced from Cohnheim's experiments. But from a series of experiments undertaken by Litten, this exception and some others seem to be explained. As already sufficiently explained, the hæmorrhage depends on the interference with the walls of the vessels due to the withdrawal of the circulation. But if the vessels are of such a nature that on the stoppage of the circulation they very rapidly pass into this condition, then we can understand that they may do so before the establishment of the collateral circulation, even though anastomosing vessels exist. In that case hæmorrhage would begin, and the infarction commence to

form before the circulation is re-established, and the establishment of the collateral circulation would only increase the hæmorrhage. This seems to be the case with the superior mesenteric and its branches. Experiment showed that ligature of the artery for 2 or $2\frac{1}{2}$ hours sufficed to alter the vessels to such a degree that when the ligature was loosed hæmorrhage occurred. But the collateral circulation seems in this vessel peculiarly difficult to establish. It appeared from experiment that though it is possible after death to inject this artery from others through the collateral branches, yet in the living body if this vessel be ligatured, and a colouring material introduced into the circulation, the pigment does not reach the area supplied by the obstructed artery. The artery, therefore, although anatomically not an end-artery, appears to be nearly so physiologically, and in man when the superior mesenteric is obstructed the hæmorrhagic infarction forms. It forms in the same way as elsewhere, for in the experiments on animals the backward flow was observed in the veins, just as in the tongue of the frog. These facts agree with cases recorded where the superior mesenteric was obstructed. It seems remarkable that the branches of the cœliac axis and the inferior mesenteric are not end-arteries in this sense.

There is one other organ which is supplied by end arteries, and that is *the retina*. The retinal artery is not infrequently the seat of embolism, and the obstruction is sometimes followed by bleeding, sometimes not. The vessels here are in many respects like those of the brain, and the influence of gravitation, &c., will here come into play. It may be remarked that the central retinal artery is probably not itself an end artery, but that its branches are. Embolism of the main artery need not lead, therefore, to permanent blindness, but embolism of a branch will cause loss of sight in the portion of retina supplied by that branch.

I had intended, gentlemen, to follow out some other matters concerning embolism, particularly its relation to the formation of aneurism, and the peculiarities which present themselves when the embolus is what we may call an infec-

tive one, as in pyæmia; but this discourse has already extended beyond reasonable limits. You will only be good enough to remember that in what has been said the case of an infective embolism has been left out of sight, and the phenomena referred to occur when a simple non-putrescent substance forms the obstructing plug.

I have also, for the most part, confined myself to purely pathological observations, only pointing out in some cases the bearing of these on clinical facts. The intelligent practitioner will readily amplify these observations, and make use of them in the diagnosis of actual cases.

III.—CASE OF TEARING OUT OF THE ENTIRE TENDON OF THE FLEXOR LONGUS POLLICIS MUSCLE BY A DONKEY BITE.

By ROBERT PINKERTON, M.B., *late House Surgeon, Glasgow Royal Infirmary.*

ON the 30th August, 1876, Hugh Henderson, carter, aged 31, presented himself at Ward 29 of the Glasgow Royal Infirmary, suffering from an injury to the thumb of his right hand.

On examination, it was found that the terminal phalanx of the thumb had been torn off. The patient produced from his pocket the missing bit of the thumb, which was found to have attached to it the tendon of the flexor longus pollicis muscle. The total length of attached tendon was ten inches. Four and a half inches of that length had a fringe of muscular tissue hanging from the free borders, indicating the extent and penniform arrangement of the attachment of the muscular fibres to it.

Patient stated that as he was leading a donkey into a stable, it turned on him and seized hold of his thumb with its teeth. He pulled violently in one direction, and the donkey retained its hold and pulled as forcibly in the other, till the tissues gave way, and the man ran off, leaving the bit in the donkey's mouth. The animal dropped it at once, and it was picked up by a companion, who accompanied

the patient to the hospital, where he came immediately after the accident.

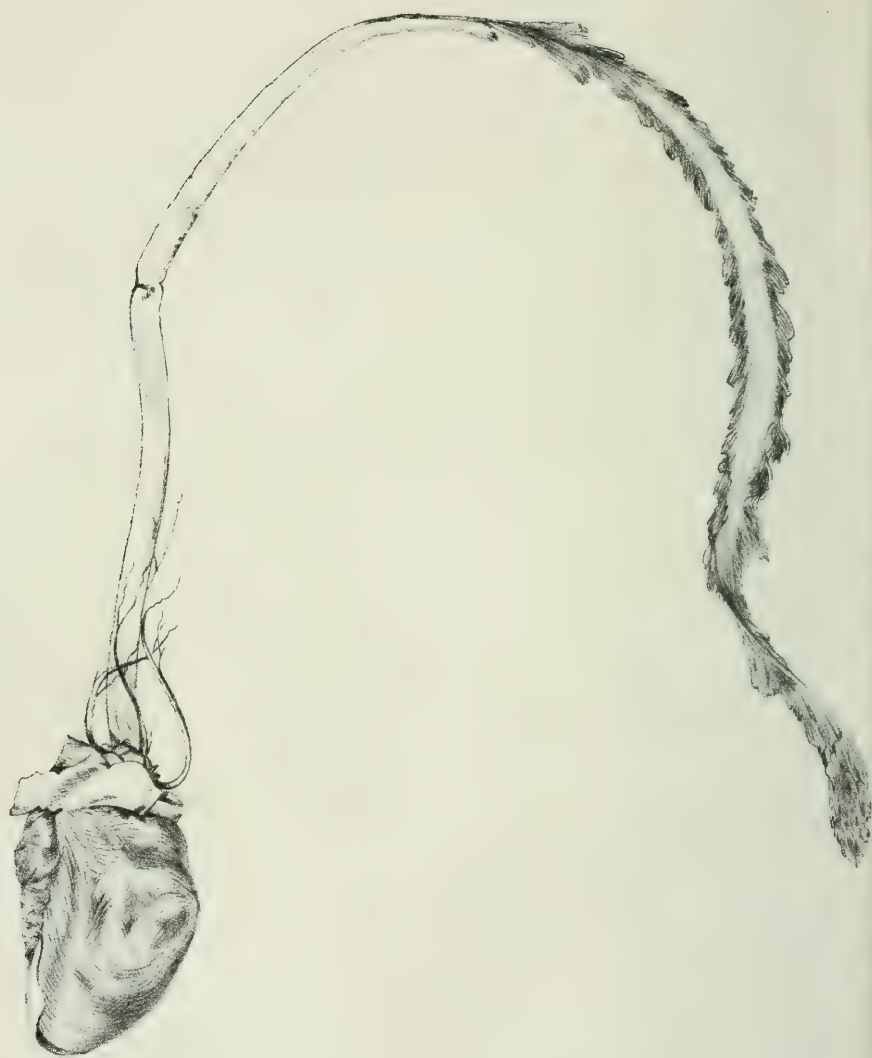
The man did not appear to be suffering much pain, and when questioned on that point, distinctly said that he was more frightened than hurt. While his wound was being dressed, and on subsequent occasions, he was concerned lest "lock-jaw" might ensue, owing to the popular belief relating to wounds of the thumb being followed by that affection.

The risk of inflammatory action spreading up the tract of the extracted tendon seemed considerable; yet as patient did not complain of much pain—certainly of none at all in the forearm—the wound was thoroughly washed out with 1 to 40 solution of carbolic acid, the edges brought together by a silver wire suture, and the whole hand enveloped in carbolic gauze dressing, and tightly bandaged up to the elbow. The arm was put in a sling, elevating the injured hand well towards the opposite shoulder. Patient was given a large dose of castor oil, and sent to his own house, with orders to return next morning.

Next morning patient stated that he had passed a very comfortable night, and only complained of a little pain in the thumb itself. On removing the dressings under the carbolized spray, the wound was found to look very well, the edges were closely approximated, and there was no appearance of pus. There was no swelling or tenderness anywhere over the forearm.

The wound was dressed twice at intervals of four days, and thereafter, till it was perfectly healed, only once a week. The wound was completely healed by the 25th September, and the patient from first to last never had a bad symptom, nor was there a single drop of pus formed. This result may be reasonably ascribed to the strict antiseptic precautions adopted at first and carried out faithfully to the end.

The firm pressure brought to bear, by the bandage, over the tract of the tendon in the forearm, was calculated to obliterate the cul-de-sac, which, according to M. Follin, is formed in such cases, and thereby to prevent effusion into it.



We see from such a case how comparatively easy it is for tendons to be torn away from their muscular attachments, with how little pain such an accident is accompanied, and how soon and easily such wounds may heal if treated antiseptically, and the cul-de-sac of the extracted tendon obliterated by firm pressure.

Such cases as above have probably often been met with, but the only example which I can find recorded in medical literature is at page 403 of M. E. Follin's "*Traité élémentaire de Pathologie Externe*," where a woodcut of a specimen taken from *Memoires de l'Académie de Chirurgie* (volume 11, page 90) will be found, which is almost identical with the present instance.

For the accompanying drawing of the phalanx and attached tendon I am indebted to my friend, Mr Alexander Leitch.

The specimen itself may be seen in the museum of the Glasgow Royal Infirmary.

IV.—NOTES ON OBSTETRIC PRACTICE.

By JAMES MULLAN, *Licentiate of the Faculty of Physicians and Surgeons, Glasgow, late House-Surgeon to the Glasgow Lock Hospital, &c.*

(Read before the Southern Medical Society.)

It has occurred to me that it might not be uninteresting to the members of this Society were I to bring before you this evening a few short notes of my obstetric practice since the year beginning 15th July, 1869. I may mention that at that date I began carefully to note the details of my midwifery practice, and from the list which I have had made out, I submit the following facts:—

I find that up to the present date I have attended 1005 cases of midwifery, and of these there were four deaths. The cause of death in three was "puerperal peritonitis," and in one hæmorrhage due to "placenta prævia." Of the 1005 cases, there were 896 living children born, 70 were still-

born, 13 were abortions, 19 were twins, and 7 premature labours; one of this last set was a twin case. Of the 896 living children, 470 were males and 426 females. In the delivery of the female children I had occasion to use the "forceps" 38 times, and 60 times in the case of the male infants. Thus it would appear, as a rule, female infants are born with less labour to the mother and trouble to the physician than male infants. In 14 cases there had been "morbid adhesion" of the placenta; in 9 of these cases female children were born, and in 5 males; in 2 of the cases there were twins, the second child in both instances being delivered by means of the forceps.

I need hardly say that in the great majority of the cases the presentation was "natural." In 26 cases, however, the infant presented by the breech, and in 17 of the cases the infants were males, and in 9 females. Out of the 1005 cases the entire number of face presentations was only 3—2 being females, and 1 male. It was deemed necessary in the case of one of the females to terminate labour by means of the forceps, so as to save the child's life. In all the cases the children were living. Arm presentations only occurred in four cases, the children being 3 males and 1 female. Of course the infants were turned, but only two were born alive; one died a few minutes after being born. In five cases there was prolapse of the funis, 3 females and 2 males. Of the five cases, there were four deaths; only one female lived; in this case the cord presented with the breech. Of the entire number of cases there were only three of hare-lip, one being a female, and one case of nævus in a male child; none with talipes or any other deformity.

With regard to the use of "chloroform," I had only occasion to use it twice, and these were operative cases, one of prolapse of the funis, and another an arm presentation.

I am glad to be able to speak favourably of the morality of my obstetric cases; which, to a large extent, is amongst the middle and poorer class. Only fourteen cases were illegitimate; of these 9 were male children and 5 females, and in the case of one of the females the breech presented, and in

one of the male cases the delivery had to be effected by the aid of the forceps, the child in this instance being stillborn.

In the 1005 cases I have only met with undue variation in the length of the umbilical cord in one case, the cord measuring $37\frac{3}{4}$ inches long, and entwined round the child's neck four times; also another case where, owing to its shortness, the child was nearly lost, having been asphyxiated for an hour and a-half, but was ultimately saved by the continuous appliance of the usual remedies in such cases.

In the administration of the *ergot of rye*, I have frequently observed that it caused a prolonged retention of the placenta, and also where its effects were not speedily observable, that it had an injurious effect on the child. In several of the stillborn cases I ascribed the cause of the child's death to ergot poisoning.

In conclusion I may observe, that in the majority of the cases here noted I always allowed nature to exercise its power before interfering, keeping in view the well-known aphorism, that "meddlesome midwifery is bad." To this cause, and to this alone, I attribute the success of such a number of cases, with such a small mortality.

V.—CASE OF MEDULLARY CANCER OF THE LIVER, SIMULATING HYDROTHORAX.

By ROBERT PERRY, M.D., *Physician to the Glasgow Royal Infirmary.*

P. H—, a miner, aged 18, an average-sized and well-proportioned young man, was admitted into the Glasgow Royal Infirmary on 28th June, 1876. He states that his mother died some years ago, but he is not able to say what was the cause of death, nor can he give her age. His father is supposed to be still alive.

Previous History.—He considers himself to have enjoyed good health till about four months ago, when, without any assignable cause, he began to be troubled with an occasional pain towards the lower part of the right side of his chest.

This pain, however, caused him so little inconvenience that he continued at his work till five weeks ago, when, in consequence of it becoming more severe, he was obliged to give up work.

Present State.—On admission to the hospital the patient is fairly nourished, but his face has a pinched and anxious look, with a dull heavy expression of the eyes. The lips are somewhat pale, the teeth covered with tartar. The tongue is moist and slightly coated with white fur. The appetite is good, and the bowels are regular. Pulse 80, of fair strength. Skin soft, and moderately moist, and temperature normal. Urine of average quantity, sp. gr. 1018, slightly acid, and contains no albumen.

He complains of pain referred to the right infra-mammary and hypochondriac regions. The pain is now almost constantly present, is not of a very acute character, and is only slightly aggravated by pressure or percussion over the parts affected. He is able to lie on either side without increase of the pain, but his usual position when asleep is upon his back or right side, more frequently the latter. He is easily fatigued by walking or any exertion, and at the same time has considerable dyspnœa, although when at rest in bed he does not complain of any difficulty of breathing. He has scarcely any cough, and no expectoration.

On inspection of the chest, it is at once evident to the eye that the right side bulges very considerably from about the line of the nipple to the last rib, and that the intercostal depressions in the same region are almost obliterated; while exact measurements from the xyphoid cartilage to mid-spine give 19 inches on the right side, and 17 inches at the corresponding part on the left side. Even during quiet respiration the movements of the left chest are noticed to be more free than those of the right, while on his taking a forced inspiration the much greater expansion of the left is made more evident.

Anteriorly over the upper third of the right side of chest the percussion note is normal. Over the lower two-thirds there is complete dulness. In the infra-axillary region there

is slight dulness on percussion, but below that to the base of the chest the dulness is absolute. Posteriorly the upper third gives a clear percussion note, but there is considerable bulging, and complete dulness at the lower two-thirds. There is no alteration of the dulness on the patient changing his position. Percussion anteriorly on the left side of chest is normal. In the left infra-axillary region there is a slightly dull note, and towards the lower part of left chest behind there is evidently some fulness, and in the same situation the percussion note is somewhat dull.

Auscultation of the upper third of right lung anteriorly reveals considerable roughening of the inspiration with deficiency of the expiration, while in the lower two-thirds of the chest the respiratory murmur is entirely absent. In the right infra-axillary region the breathing is scarcely audible, but some deep-seated mucous râles are heard, and thence downwards the respiratory sounds are absent. Posteriorly over the upper half of right chest the respiration is only slightly exaggerated, but in the lower half it is altogether wanting.

On auscultation of upper two-thirds of left chest the respiratory murmur is somewhat roughened, with slightly defective expiration, except in the infra-axillary region, where the breathing is replaced by what appears to be deeply-seated fine crepitation. In the lower third of left lung the respiratory sounds are almost inaudible.

The area of cardiac dulness appears to be normal. The heart's sounds are muffled, but free from any murmur.

There is a degree of fulness in the right hypochondriac region, but no pain complained of upon pressure. By palpation and percussion the lower border of the liver is made out to extend in the mammary line for fully an inch below the level of the ribs, but the outline of the edge is somewhat indefinite.

It was evident from the physical symptoms that there was a large quantity of fluid occupying the lower two-thirds of right chest, pushing upwards, and compressing the right lung, and also apparently depressing the liver. The

level of the fluid did not, however, alter by any change of the patient's position, and contrary to what is usual in pleuritic effusion, the dull percussion note behind did not extend quite so high as in front. The history of the case previous to the patient's admission into the hospital was deficient in exactness, and appeared to indicate that the liver, if not the organ primarily affected, was at least implicated.

One of my colleagues, after a somewhat hurried examination, recommended the adoption of paracentesis thoracis, but although I had little expectation of causing absorption, or removal of the fluid, which I believed to be present in the chest, by any other treatment, still as the diagnosis to my mind was not quite clear, I resolved rather to temporize and watch the further progress of the case, and meantime to try the effect of rest, nutritious diet, and the internal administration of a mixture containing both the iodide of potassium and the acetate of potash.

During the first fortnight's residence in the hospital he appeared to improve in general health and strength, and there was a slight diminution in the size of the right side of chest. From that time on to the 28th of July, when I last saw the patient before leaving town for my summer vacation, he began rather to decline, and the enlargement of right side commenced to increase, although not to any very marked extent.

From this date till after the 27th August the patient was under the care of Dr Lawrie, who took charge of my wards during my absence.

August 11th.—Dr Lawrie performed paracentesis thoracis and drew off 120 oz. of fluid containing a large number of blood cells; he had, however, to desist, as the patient was fainting. Champagne was administered, and the patient expressed that he was relieved.

August 21st.—The same operation was repeated, but again the aspiration had to be stopped after taking away 40 oz., on account of the faintness induced. The fluid on this occasion evidently contained more blood than at last operation.

August 27th.—The patient has been in such a depressed condition since last operation that I have not ventured till to-day to disturb or exhaust him by any minute examination.

The features of the case are now very different from what was observed a month ago. He is now very markedly anæmic, is much emaciated, and complains of being very weak and unfit for the slightest physical exertion. The most noticeable difference in the chest symptoms from those formerly noted are the following:—Anteriorly, the dull percussion note extends higher, and is now to the lower line of the second rib; posteriorly, the percussion note is clear from above to an inch below the spine of the scapula.

Respiration can be heard (although weak and slightly roughened) as far down as an inch below the angle of the scapula. Externally and below that point it is entirely absent, but becomes louder and more roughened going thence towards the spine. The bulging posteriorly, although visible at the lower part of the chest, does not correspond with the amount of bulging anteriorly. The measurement of right chest at level of xyphoid cartilage is now $19\frac{1}{2}$ inches, while that of left chest is 17 inches.

There is now a marked fulness in right hypochondriac, epigastric, and left hypochondriac regions.

On further examination a tumour is felt occupying nearly the whole of right side of abdomen, and extending across the epigastric to left hypochondriac region. The dull percussion note is continuous on right side of body from the second rib, down almost to the crest of the ileum, measuring about 14 inches, vertically in the mammary line. The tumour on right side of abdomen has a semi-elastic feeling, indistinctly fluctuating, and not painful upon pressure. It is apparently formed by one or more large cysts, and the borders of it are not here easily defined. That portion of the tumour extending to the left hypochondrium is firm, with a well-defined edge, and is apparently the left lobe of the liver.

August 30th.—After consultation with my colleagues, it was agreed to make an exploratory puncture into the cyst with a fine trochar and canula to ascertain the nature of the contained fluid. A small puncture was accordingly made into the most prominent portion of the tumour in the right hypochondrium, and about two drachms of sanguineous fluid drawn off. The nature of this fluid showed the inexpediency of withdrawing any more. The patient from day to day after this became weaker till the date of his death on 4th September.

Post-mortem report by Dr Foulis, pathologist to G.R.I., September 5, 1876. The body presented the peculiarity that the whole of the right side was rounded and bulging, and on opening the chest, with a view to removal of the sternum, a large hollow cyst was opened into, at the lower part of the right chest; from the cyst a red fluid escaped. The cyst was found to be in connection with the right and back part of the liver, the left three-fourths of the liver tissue being quite sound, and the cyst was clearly demarcated from the sound liver tissue. The cyst occupied the space from the second right rib down to the crest of the ileum. The diaphragm was pushed up, but not intimately attached to it; the liver was displaced to the left side. When the cyst was opened its contents were seen to be a mixture of fluid blood, some clot, and a large quantity of a spongy, ragged matter. The wall of the cyst was composed in places of a thin layer of compressed liver tissue; it was lined here and there by the same ragged material, and there were little masses of white cancer matter in the wall. The microscopic examination of these white nodules, and of the ragged spongy contents of the cyst, showed the structure to be that of medullary cancer. The gall bladder was not involved: the remaining portion of the liver tissue was free from cancer. The heart was normal, weight 10 oz. The pleural sacs were quite normal, and free from effusion; a few adhesions existed in the left apex. The right lung was quite compressed and non-crepitant, flabby, and of small bulk; weight 14 oz. The left lung was only slightly affected by the pressure,

being everywhere crepitant; weight 20 oz. The right kidney was adherent to the sac of the cyst; weight 8 oz.; cortical substance rather pale. Left kidney, weight 6 oz., and of normal aspect. Spleen 3 oz., normal. Brain 45 oz., normal. The other organs in the body were normal, and nowhere was there any deposit of cancer, or any enlarged glands, with the single exception of the right extremity of the liver. The conclusion come to, therefore, was that a localized but rapidly growing medullary cancer of the extreme right and back part of the liver had become the seat of hæmorrhage from opening into some of the larger vessels so near the vena cava, and that passive hæmorrhage had then gone on, dilating the cyst until the patient died.

Remarks.—Cancer of the liver is by no means a very rare disease, and, generally speaking, there is little difficulty in diagnosing it. It occurred in this case at an unusual period of life—viz., 18 years of age. Of 83 cases recorded by Frerichs, in his treatise on diseases of the liver, only 7 were from 20 to 30 years of age, and the great majority were above 40 years. Murchison says that cases are extremely rare where the liver is primarily affected with cancer before 35 or 40. Secondary cancer of the liver may occur at any age. I have not made very extensive search into the literature of this subject, but I have read of no similar case in which there was such a largely developed cyst. A case is recorded by Dr Bright in his Clinical Memoirs of Abdominal Tumours, reprinted from Guy's Hospital Reports, by the New Sydenham Society, in which a malignant tumour of a fungoid nature, arising from the left lobe of the liver pushed up the diaphragm as far as the third rib on the left side. The patient was 59 years of age, and other parts of the liver were hob-nailed.

Frerichs also gives "cystic cancer" as one of the varieties of the disease, in which rounded cavities, from the size of a pea to that of a walnut, filled with a clear serous fluid, and lined by a smooth serous-looking membrane, are found in the interior of the cancerous nodules. There are, however, in this case various points, such as the age of patient, the pri-

mary and localized character of the disease, together with its course and appearance when first seen, which render it, in my limited experience, unique.

VI.—CASE OF PEMPHIGUS CHRONICUS.

By WM. SNEDDON, M.D., L.R.C.S.E., *Beith.*

I WAS called to see MRS W., aged 78, for the first time January 12th, 1876, and found a copious vesicular eruption spread over the flexor surfaces of arms and forearms, and the inside of thighs. There were a few vesicles on the chest in the mammary region.

The vesicles varied in size from about a three-penny-piece to half-a-crown; those on the thighs and chest were generally larger than those on the arms and forearms. The vesicles were filled with a clear serous fluid, which became more turbid and creamier in appearance when allowed to mature naturally. A few of them were filled with a sero-sanguineous fluid. She had been ill for three weeks before sending for me, so that the vesicles were in different stages, according to time of appearing. There were dark brown scabs on the sites of most of the matured vesicles, and the disease seemed to heal by this process. The skin generally was dry, mealy, and harsh. She was troubled so much with pruritus that she could not rest well at night, and she complained also of flushings of heat occurring chiefly during the night. Temperature normal, and remained so during her whole illness, at least as far as observations went. Pulse, 90; tongue clean, moist; appetite good, and bowels regular. The vesicles when beginning to rise were about the size of a pin's head, and were very itchy at this stage. They seemed to grow to their full size in about twelve to twenty-four hours, and came out in crops in about the same time. The vesicles did not coalesce as a rule. About the third day or so the skin at the circumference of the vesicles became inflamed, and it continued to be irritable till the scabs were

about to fall off. After about a week scabs were formed, some of which were pretty thick, and remained adherent for a considerable time.

History.—Felt out of sorts from end of 1873 to October 1874, when she noticed a small blister on her right arm. She did not pay much attention to it at first, but then a few others came out, and the part turned very itchy. The vesicles did not appear on any other part, and by the middle of November she was well. In April, 1875, she had a second attack, which was more obstinate, and for which she consulted Dr McCall Anderson. She was ill for three months at this time, and the eruption was pretty general. She did not feel well in the interval between this attack and the present one.

As to treatment I gave her the following medicine:—

R.	Quiniæ sulph.	gr. x.
	Liq. arsenicalis	ʒiss.
	Tinct. ferri. perchl.	ʒijss.
	Syr. zingiberis	ʒvj.
	Aquæ ad	ʒiv.
		Sol.

Sig. A dessert spoonful thrice daily after meals.

R.	Ung. zinci oxid.	
	„ simplicis ā ā	ʒijss.
	Acid. carbolic	ʒj. M.

Sig. The ointment to be applied morning and evening.

She also used the following lotion, which was prescribed for her by Dr McCall Anderson, in her second attack:—

R.	Glycerine	ʒij.	
	Spt. vin. rect.	ʒv.	
	Acid. carbolic.		
	Eau-de-Cologne, ā ā	ʒss.	M.

Sig. To be applied frequently.

I ordered her to have generous diet.

The eruption continued to spread, and seemed to do so by continuity, for it crept from the edges of the affected parts until by the beginning of February the whole body, from the edge of the hairy scalp to the soles of the feet was

covered. The skin was most irritable at the wrists, and the desire to scratch the parts was so intense that she could not resist it, though knowing it was likely to be worse afterwards. The vesicles were pierced with a needle, and the opening was slightly enlarged, though the epidermis was not altogether removed. It was observed by the nurse that the vesicles filled and refilled several times, and when she dressed the patient there was always a crop to puncture. I watched a few of them and found she was correct.

I may here observe that at a later stage of the illness, when the vesicles were large, and especially when situated on the back and shoulders, that they did *not* scab.

The cuticle over vesicles when pierced had a bleached, wrinkled appearance. It took about two hours, morning and evening, to dress her.

As the eruption continued to spread downwards on the legs in spite of the treatment mentioned, I tried the application of lunar caustic in the manner described by Dr Graves of Dublin, and which was so successful in the case of the boy thus treated, but am sorry to say in my hands it had not the slightest effect in staying the disease. The only result was the permanent destruction of a few of the vesicles. The vesicles were not confined to the skin, for on Jan. 31st I noticed the rather curious fact that one or two had come out on the *palate*. I saw them here, as well as on the fauces, now and again for nearly six weeks. They did not continue distended, but presented the blanched appearance already described. It would therefore appear to prove the analogy of the skin and mucous membrane. The eruption did not appear in the mouth till the face had become affected, so that this would help to the conclusion that it spread by continuity. But I have to state this qualification, that I noticed her putting the pins in her mouth when undressing.

Vesicles were seen on ears, eyelids, nose, and very numerous on the lips. Further, about March 26th, she was very hoarse, and I supposed the hoarseness was due to vesicles which had descended into the larynx. As is well known, the eruption of small-pox and chicken-pox is frequently seen

on the mucous membrane of the mouth, and *sometimes, though rarely, that of the former is seen on the intestines without appearing on the skin at all.* This symptom does not, therefore, seem to be confined to pemphigus. I do not mean to say that the disease spreads only by continuity, for at a later stage vesicles appeared here and there over the body.

As the patient was now much weaker, and as the treatment was apparently having no effect, I had the pleasure of a consultation with Dr M'Call Anderson on February 4th. After consultation, she was ordered the following:—

R.	Liq. arsenicalis	
	Ferri amm. cit. ā ā	ʒiv.
	Syr. aurantii	ʒiij.
	Tinct. calumbæ ad	ʒvj.
		Sol.

Sig. A teaspoonful in a glass of water thrice daily before food.

R.	Zinci oxidi	
	P. lycopodii. ā ā	ʒiss.
	G. camphor.	ʒi. M.

Sig. To be dusted occasionally.

And the lotion was also used on the raw surfaces when the cuticle was removed. She was ordered to take a pint of beer daily, and to continue the tablespoonful of whisky at bed-time.

The eruption remained very much in the same state till March 8th, when the vesicles came out less frequently, and were soon more sparsely scattered over the body. Her pulse averaged about 120, and was much smaller. She was also thinner and weaker. Her feet and ankles were œdematous at this time, but urine was normal.

The eruption was worse again, March 27th, and continued so till April 8th, after which date it gradually but slowly decreased. The inside of the thighs and flexor surfaces of the elbow joints were longest worst, though the vesicles came out latest on the neck, shoulders, and back, and were largest in size. She regained strength from the beginning of June, and by July was able to be up daily for half an hour.

At time of writing, November, she feels as strong as ever, and was able to make a journey to the north of England in the end of August. Isolated vesicles come out still, and the irritation of skin is present at night. She takes her mixture once a day, and finds if she stops it that more vesicles come out. Her knee joints are stiff, from having kept her legs flexed when confined to bed for six months, and from the knee downwards the feeling is not so acute as formerly.

Note.—Since the above was written, the patient has continued to improve, and at present no vesicles appear, although the irritation of the skin still continues.

VII.—REPORT OF CASES TREATED IN PROFESSOR MACLEOD'S SURGICAL WARDS IN THE WESTERN INFIRMARY DURING THE YEAR ENDING 31st OCTOBER, 1876.

By ROBERT MOFFATT, M.B., C.M., *Resident Physician, late Resident Surgeon, Glasgow Western Infirmary, and Assistant Physician to the Skin Dispensary.*

IN this paper is embodied an account of the cases admitted into Professor G. H. B. Macleod's Surgical Wards in the Western Infirmary during the year ending 31st October, 1876, with brief notes on cases of interest.

The number of patients under treatment during this period was 314, of whom 177 were males, and 137 females. But, besides these, 80 males, and 49 females—total, 129—presented themselves with injuries or diseases of such a nature as not to demand actual supervision in the house, and were therefore treated as “outdoor” patients. The total is thus: indoor, 314; outdoor, 129—443. Of the in-patients, 301 recovered, or were dismissed much relieved, and 13 died—a mortality of 1 in 24·15, or 4 $\frac{1}{4}$ per cent. While deducting from the total number of deaths 2 which occurred within four hours, and 2 within twelve hours after admission, gives the mortality as 1 in 34·88, or 2 $\frac{1}{2}$ per cent.

The idea of a more favourable result could scarcely be

entertained, considering that a large number of the cases were of a very serious description. The total absence of pyæmia, erysipelas, and hospital gangrene speaks well for the present sanitary condition of the wards, but part of the success was undoubtedly due to the adoption of the antiseptic treatment, which was carried out with the careful attention suggested by Mr Lister. The difficulties of the antiseptic treatment appear to be centred in those cases of disease where there are long existing sinuses, and in wounds communicating with a joint or fracture. But in the former cases—and many examples could be cited in proof of this—the free use of chloride of zinc solution, and in the latter the thorough saturation of the tissues with a strong solution of carbolic acid caused in a very short time a marked diminution in the amount of discharge, and rendered what there was perfectly “sweet.” One of the most essential points to be attended to is a free drainage, and for this Chassaignac’s tubes, of various sizes, are invaluable, claiming a superiority over the tube formed of protective tissue, which being more readily collapsed, tends to imprison the greater part of the discharge when it is excessive, and so keep up an irritation which probably would otherwise be unknown. The efficacy of boracic and salicylic acids is proved in cases where the carbolic solution is too irritating, the use of either acid being indicated on the slightest appearance of flabbiness or want of tone in the granulations. Thus, the antiseptic treatment, ushers in an era of surgery, in which the science will be enriched and the practice rendered more conservative. But besides this, the benefit derived from efficient nursing is very great and must not be forgotten, and fortunately the necessity of having intelligent and thoroughly trained nurses is now recognised by most hospital authorities.

A glance at the following list of casualties will show how comparatively few were the accidents admitted during the year:—

Indoor.—Severe bruises, 8; burns, 4; dislocation, 1; fractures, 30; wounds, &c., 15—total, 58.

Outdoor.—Bruises, 12; dislocations, 3; fractures, 10;

wounds, &c., 22—total, 47; the total number of accidents being 105. Six of the fractures were compound, while the others were simple, and varied much in severity, a few being into joints.

Of the diseases treated in the wards, diseases of bone and joints, and urino-genital affections were the most common, being $10\frac{1}{2}$, $10\frac{4}{5}$, and $12\frac{1}{8}$ per cent. respectively. Of the many cases of interest a few are worthy of notice.

Vesico-intestinal fistula.—J. H., aged 44, after suffering for six months from frequent and painful micturition, hæmaturia, pain in the hypogastrium and perinæum, and swelling of the right testis, felt a “burst” take place, while straining at stool, and almost simultaneously, fæces were discharged per urethram. After a four months’ convalescence, the difficulty in micturition returned, and was soon succeeded by retention of urine. About this time, ten months previous to admission, and eleven months from the onset of the disease, he observed a small lump at the “root” of the penis, which disappeared on the sudden and painful expulsion, a few hours afterwards, of what his medical attendant pronounced to be a “fruit stone.” Immediately the urine became intimately mixed with feculent matter, and was expelled both by the urethra and rectum, especially the former, while a considerable amount of flatus escaped by the same channels. Ultimately the bowels were very costive, and, on his admission, he was in a very low state. Treatment of a palliative nature was tried with partial benefit, but he died at home a few weeks afterwards. The sigmoid flexure was found to open directly into the bladder by an orifice large enough to admit three fingers. The walls of this viscus, which contained fæces in considerable quantity, were lined with colloid cancer, which involved also the colon at its junction with the bladder. The rectum was empty and free from disease, but the ascending and transverse colons were much distended at parts by dark, hardened masses of fæces.*

* Since writing the above, a full and interesting account of this same case has been published by Dr Macleod in his “Remarks on Intestinal Obstruction,” in the *British Medical Journal* of Dec. 2, 1876.

2. *Atony of Bladder*.—J. W., aged 78, had for twelve months been subject to retention of urine, gradually getting worse. No history of stricture, verified on examination. The prostate gland was just perceptibly enlarged, while there was complete absence of any special symptoms. Easton's Syrup in drachm doses thrice daily, the use of a catheter three or four times a day, and the application to the wall, and neck of the bladder, of an electro-magnetic current, as described by Sir Henry Thompson in his "Diseases of Urinary Organs," 1876, p. 343, proved most successful in 18 days, when patient was dismissed.

3. In three out of five cases of stricture, of which one only was traumatic, Holt's dilator was used with signal benefit. The first case was a long, hard stricture, beginning about an inch in front of the triangular ligament, and extending along the membranous portion of the urethra, where it formed a bullet-like mass. With some difficulty it was dilated to No. 14. No instrument was passed till the 14th day, when a No. 9 metallic bougie glided with ease through the seat of stricture. Micturition, with the exception of the first couple of days, was free. In the second case a tight stricture in the spongy portion of the urethra was dilated to the same extent, a No. 12 bougie being passed readily on the fourth day after dilatation. The use of Holt in the third case, which was an exceptionally tight stricture, was not so immediately successful; but after the elapse of three weeks a 12-sized bougie was passed without difficulty. These cases, though few, may, from their severity, show that the use of instruments every alternate day after dilatation is unnecessary—nay, probably injurious, as tending to create further irritation. It would seem, therefore, that nothing can be lost, but much gained, by deferring the passing of a bougie or catheter for some days, as practised by Dr Macleod.

4. *Case of False Anus*.—M. T., aged 56, had femoral hernia for 18 years. Seven months previous to admission the hernia became strangulated; but patient having objected to an operation, poultices were applied till the tissues

sloughed, and the swelling was "lanced." By the rending of the tissues, a wound, 10 inches long, formed along the flexure of the thigh, but quickly healed up to a point situated in the middle of that line, through which fæces have passed in considerable quantity. Through the wound protruded two small pouting folds of intestinal mucous membrane. The lower bowel had to be emptied from time to time by enemata.

5. The last case I shall refer to is one of *Aneurism by Anastomoses*.—J. D., aged 25, admitted 15th May, 1876. The day previous to admission, an operation, attended with considerable loss of blood, and with little benefit to patient, had been performed on a large, slowly-increasing, and painless swelling on the left side of neck. On the 16th, a dissection was made by Dr Macleod into the wound, which was sloughy, and extended from near the mastoid process to within two inches of the clavicle, and many needles, which had been used for arresting the hæmorrhage, were withdrawn. The middle portion of the sterno-mastoid muscle, which was very vascular and spongy, and apparently the seat of the disease, was excised. Hæmorrhage was commanded by ligature and the actual cautery. The wound, a formidable one, was stuffed with lint soaked in perchloride of iron, and two sutures inserted into its upper angle. 23rd. Slough separated; wound dressed with carbolic solution. 29th. Sutures removed; discharge scanty. June 6th. Cavity filled with healthy granulations. Improvement was steady till 21st, when patient was dismissed perfectly well.

Having already referred to the rate of mortality, it is only necessary now to observe the cause of death in the cases which proved fatal; and that, I shall endeavour to do as briefly as possible.

1. H. M'L., aged 45, was admitted suffering from acute tetanus of 22 hours' duration, which had supervened on a lacerated wound of right great-toe. The spasms were severe, and failed to amend under treatment adopted, patient dying one-and-a-half hours after admission. In this case

death occurred three days after receipt of injury, and $23\frac{1}{2}$ hours after the onset of the tetanus.

Alongside of this may be placed another case of tetanus, which ran a somewhat different course.

2. J. K., aged 12, admitted 12th May, 1876. Seven days previously, patient's right hand was badly contused and lacerated. On admission, part of the hand and four fingers were sloughing, the thumb alone remaining intact. The fingers were easily removed, and hand did well. On June 5th, well-marked "trismus" showed itself, followed and accompanied on the 7th by "opisthotonos." Severe "sub-sternal" pain was complained of the following day. Patient was almost free from spasm on the 13th, and the hand was healing well by granulation; but on the 15th "laryngeal spasm" set in, and continued at short intervals for two days, when patient succumbed. The administration of chloroform, when necessary, and an occasional dose of chlorodyne, was the course of treatment pursued in this case. The tetanus set in 16 days after the injury, and death took place on the 13th day of the disease.

The undernoted cases exemplify the diversity in symptoms which may occur in fractures of the skull with almost similar lesions.

3. D. B., aged 45, had fallen down a stair, and on admission, two hours afterwards, was suffering from compression. The only external injury was a slight bruise over the left parietal bone. There was found after death, which took place in $9\frac{1}{2}$ hours, an extensive fracture, involving the most convex portion of the occipital and parietal bones, and the squamous portion of the temporal. There was a great quantity of fluid in the right dura mater, and flattening of the right hemisphere. A considerable subarachnoid hæmorrhage communicated with the surface through a rupture in the arachnoid. The left hemisphere and pons were also the seat of hæmorrhage. Kidneys were deeply hyperæmic. About 60 ounces of pale urine had been withdrawn during life.

4. B. D., aged 60, admitted 21st May, 1876, with two small

scalp wounds over occipital protuberance. Concussion was slight. In three days the wounds were healed. On the 6th day there was restlessness, shortly succeeded by inactivity, overflow of urine, insensibility and dilatation of pupils, and stertorous breathing, terminating suddenly in death. Post-mortem examination revealed fracture of the occipital, parietal, and squamous portion of temporal bones, and a less marked fracture of the greater wing of the sphenoid. The right dura mater contained a considerable amount of semi-fluid blood. Under surface of the right, middle, and anterior lobes was lacerated. The lateral ventricles were distended with fluid, and the pons ecchymotic. Kidneys very hyperæmic.

5. W. C., aged 17, died, within twelve hours, from severe abdominal injury, a waggon wheel having passed over his body. The mesentery was contused, and the ascending colon perforated, while the signs of peritonitis were distinctly visible.

6. R. C., aged 76, was ran over by a tramway car, and sustained a severe compound fracture of tibia in its lower third, and bruising of side. On admission she was suffering from extreme shock, from which she never rallied, but died on the fourth day.

7. J. R., aged 9, admitted almost comatose from acute periostitis, which had been neglected, and treated for fracture. An incision was made antiseptically, but patient died in 11 hours. The tibia and fibula, which had been the seat of periostitis, were perfectly bare in nearly their whole length.

8. E. C., aged 24, died suddenly from the effects of a very large cancerous tumour closely connected with right Fallopian tube. The peritoneum and pericardium were dotted with smaller or larger growths of a similar nature.

9. J. O., aged 19, died of tubercular disease. He was admitted with an abscess connected with disease of the humerus, which recovered well.

Of the remaining four fatal cases, two were associated with necessary and precarious operations—viz., ovariectomy and herniotomy—while the others succumbed to secondary

complications beyond the control of the surgeon, the primary affection having been cured. These will be treated in detail immediately.

The number of operations was 120, with a mortality of 1 in 60, or $1\frac{2}{3}$ per cent., or $3\frac{1}{3}$ per cent. if the four deaths be taken into account.

During the year there were 13 minor and 8 major amputations disposed as follows:—

1. Amputation of thigh in patient aged 34, for necrosis of femur, following excision of the knee, which had been performed by Dr Patterson, in Dr Macleod's absence, for extensive disorganisation of the joint.

2. Four amputations of the foot were performed by Syme's method, one of which was primary, and one by Roux's mode of operating. In each case the result was good.

3. An amputation at the knee-joint, by Carden's method, for disease of joint of two years' duration, proved successful.

4. Amputation at the hip-joint.—A. W., aged 11, admitted 23d April, 1876, with malignant disease of femur of nearly three months' duration. There was no chest affection. On May 6th amputation at the hip joint was performed by Dr Macleod; the hæmorrhage was nominal, being efficiently commanded by digital pressure. The wound was dressed antiseptically. June 13th, about an inch only of the wound remained unhealed, but was quite closed in seven days, when she was dismissed perfectly well. On October 23rd, patient had developed symptoms of pulmonary disease; and on 14th November a letter announcing her death was received. A section of lung tissue, examined by Dr Coats, was found to "consist of spindle cells and cartilage cells, the latter being the more numerous, and giving the general characters to the tissue. The tissue, however, had not the characters of proper cartilage, the cells being much more abundant, also for the most part in a state of fatty degeneration, the tumour therefore was a chondro-sarcoma."

The difficulty of keeping a wound antiseptic in such a situation is necessarily great, owing to the tendency of the fæces and urine to find their way into the dressing, but by

the sealing of the inner border of the dressing with gauze and collodion, the wound was enabled to retain its antiseptic character throughout, while the dressing was kept well in position.

5. Excision of elbow-joint—nine cases, all very successful. The ages ranged from $2\frac{1}{2}$ to 12 years. In many of the cases the line of incision was observed, at the first dressing, to be occupied by blood clot which seemed to hasten the closure of the wound.

6. Four out of five cases of excision of the knee-joint recovered well. In the fatal case the knee was healed in 57 days after operation, but patient died ultimately of phthisis pulmonalis. In all the cases the efficacy of a splint, devised by Dr Macleod, was thoroughly proved.

7. Excision of the tongue for extensive epithelioma in a man, aged 45. The operation was performed by dividing the lower jaw and applying the galvanic ecraseur to the tongue, the removal of which was unattended by hæmorrhage. Patient was dismissed well in three weeks, and two months afterwards, could speak very intelligibly, and swallow his food tolerably well.

8. Excision of left upper jaw for extensive malignant disease. Patient, who was 66 years of age, was dismissed in 15 days free from pain, and with wound healed.

9. An excision of a papilloma from the tongue by the galvanic wire cautery was performed without causing the slightest hæmorrhage. Recovery was perfect in 15 days.

10. Excision of os calcis for caries of the bone in a boy, aged 9. Successful.

11. Excision of two metatarsal bones by splitting the foot; recovery with a sound, useful, well-shaped foot in 32 days.

12. Excision of two metacarpal bones in a similar manner, by splitting the hand between the middle and ring fingers. Patient was well, and had perfect use of his hand and fingers in 90 days.

13. Excision of mamma, two cases, aged 41 and 43, with successful termination in each case on the 25th day.

14. Excision of cystic tumour from right supra orbital region. In 29 days wound was healed, but the day patient was to have gone home he died suddenly. A *post-mortem* examination could not be obtained.

A number of excisions of small growths, bones, testes, &c., were performed, but do not call for special notice.

15. Herniotomy, two cases, one fatal—1. M. B., female, aged 50, had strangulated femoral hernia for six days; poultices and blisters had been applied previous to admission. At the operation, the bowel was observed to be much congested. Death took place in five hours from perforation of bowel, as revealed at *post-mortem*. 2. A. G., female, aged 50, admitted with a large femoral hernia, strangulated for 24 hours. Wound was healed on 11th day, and patient dismissed perfectly well in 26 days.

16. Ligature of femoral artery. While leg was being turned during an operation for extensive necrosis of femur, the artery was so much injured by a projecting spiculum of bone that it was found necessary to ligature the vessel above and below. Successful.

17. Lithotomy was performed in two cases of vesical calculus. In the first case, aged 25, lithotripsy had previously been resorted to three times; the second patient was 78 years of age. The rectangular staff was used in each case. Recovery took place in 30 and 25 days respectively.

18. Lithotomy, for encysted calculus in the urethra, performed, with ultimate success, by Dr Knox, in Dr Macleod's absence.

19. Lithotripsy, one case. Good result.

20. Ovariectomy. Death. M. T., aged 33, with ovarian tumour, which had only been noticed by patient ten weeks previous to admission. With the exception of an occasional dragging pain, patient felt tolerably well, and seemed a suitable case for operation, but on opening the abdomen most extensive and highly vascular adhesions were observed over the whole tumour, which had also further attachments to the liver and brim of the pelvis. Adhesions were severed by tearing, and hæmorrhage arrested by the use of the actual

cautery. Patient rallied slightly, but soon passed into an exhausted condition, from which she never rallied, but died in 44 hours.

21. Two plastic operations were performed, one for syphilitic atresia oris, and another for double harelip, with favourable results.

22. Tenotomy in five cases of talipes varus, &c., one double. In one of these cases Dr Heron Watson's splint was used with but partial benefit.

In the above, I have not attempted to give a complete list of the operations, as little could be gained by its perusal, but have noted those only, which, though far from being uncommon, are nevertheless worthy of mention.

In conclusion, I append two cases from my notes, illustrative of the antiseptic treatment of compound fractures. The results speak for themselves.

1. C. T., aged 52, baker, admitted 5th April, 1876.—A van fell upon his left leg, and on admission to the Infirmary, three hours afterwards, a wound three inches long was found passing obliquely downwards and inwards over the lower end of the tibia, which protruded through the wound about an inch. The internal malleolus was broken off, and the fibula fractured in two places about two, and four inches above the tip of the external malleolus. The foot had suffered considerable displacement. Patient was immediately put under the influence of chloroform, and, under the ordinary carbolic spray, the exposed bone was well washed with carbolic solution (1-20), and through a flexible catheter, previously steeped in carbolic acid, and introduced into the various parts of the wound, the cavity was thoroughly syringed out with a similar solution. Reduction of the displacement was, with little difficulty, effected, and the wound again submitted to a saturation with carbolic. A couple of antiseptic sutures were inserted into the upper part of the wound, while into the lower, which was left open, a drainage tube of medium size was placed. The edges were considerably bruised. A "male" Pott's splint, padded with charpie, and well wrapped up in carbolised gauze, was adapted to the outer side of the

leg, and secured permanently by a gauze roller applied round the foot from the toes to the heel, and from below the knee to within a few inches of the wound. A small strip of "protective," perforated for the tube, was applied over the wound, just overlapping its edges, and covered by some pieces of loose gauze wet with carbolic solution (1-40). Over all was placed a large dressing consisting of eight layers of gauze, between the two outer of which was interposed a square of "jaconette." The inner side of the leg was supported by a "female" Pott's splint, and the limb bandaged from the toes upwards with gauze, and swung in "Salter's cradle." In the evening, a few hours after admission, patient's temperature was 100°, and his pulse 94, regular, and of fair strength. Respiration normal. Pain in the leg was relieved by 15 minims of Battley's sedative. April 7. Dressing renewed. Wound free from irritation. Temperature, 99°.8; pulse, 80. 13th. Wound has been dressed every second day, and has united for about an inch at its upper end, while the edges are sloughy at the lower extremity, where, also, the bone is exposed for about an inch, but is in good position. Discharge is very scanty, and sero-purulent in character. Sutures removed. Temperature and pulse quite normal. 16th. The narrow sloughs have separated, and the lower part of the wound has assumed a healthy appearance. The bone is covered with small, thick-set, healthy granulations. Patient's general condition is good. 29th. It was found necessary this morning, owing to slight burrowing to the outer side of leg, to make a counter opening, which was dressed antiseptically. There is distinct evidence of a portion of the tibia separating. May 10. Patient was put under chloroform, and a small exfoliation of bone easily removed through the dependent part of the wound, which is open for about an inch, and gapes somewhat. No constitutional disturbance. 22d. Wound almost closed. No discharge. 31st. The wound is now perfectly superficial, being filled up, from below, with granulation tissue. June 17. Splints removed. The counter opening, which had been left undisturbed since the day it was made, is perfectly closed, little or no trace of

its whereabouts remaining. The original wound is quite well, having for some days been dressed with dry boracic lint. On 22d June patient was dismissed. There was slight motion in the ankle joint, and he could walk, and otherwise use his leg with comparative freedom.

Having given, in this case, the *modus operandi* observed in the antiseptic method of treatment, it will be unnecessary for me to enter with the same detail into the following case:—

2. J. C., aged 20, labourer, admitted 29th July, 1876.—Some hours previous to admission the tram of a loaded cart fell on his left leg, whereby he sustained a fracture of both bones about the junction of their middle and lower thirds. A slightly contused and lacerated wound, about an inch and a half long, was situated transversely in the inner and anterior aspect of the leg, on a level, and communicating with the seat of fracture. The wound was freely injected, through a catheter, with carbolic solution (1-20). A “male” and “female” Pott’s splint, carefully guarded, were adjusted to the inner and outer sides respectively, and fastened with a gauze roller above and below within a few inches of the wound, which was covered with protective and loose gauze, and the whole enveloped in a large antiseptic dressing. No drainage tube was used. The limb was placed in a “Salter’s swing.” Patient to have light diet, and 15 minims Battley’s sedative when necessary. Temperature, 101°; pulse, 96. July 30. Patient has been quite free from pain. Temperature, 98°.8; pulse, 90. 31st. Dressed; wound filled with a small clot, the dressing showing evidence, also, of slight oozing. There is no swelling, redness, or other sign of irritation around the wound. Temperature, 99°; pulse, 88. August 4. On renewal of dressings gauze was unsullied by discharge. Wound still occupied by clot, which seems to share in the healing process around the edges. Temperature and pulse normal. Patient’s condition, generally, is good. 15th. Improving steadily. Wound glazing over. Bones in excellent position. September 2. Wound has been healed for some days, though cicatrix is somewhat tender. Dry boracic dressing. 10th. Splints removed. Leg



DISLOCATION OF THE TIBIA.

firm. No excess of callus. Starch bandage applied. 14th. Patient dismissed with leg perfectly well, being able to walk without the slightest lameness.

The accompanying sketch, taken with the leg lying on its outer surface, illustrates a case of long standing partial displacement inwards of the lower end of tibia. The patient was under treatment in the ward for syphilitic disease of the femur, from which he made a good recovery, but, as he suffered little or no inconvenience from the condition of the leg, no interference was necessary.

Reviews.

I.—THE FUNCTIONS OF THE BRAIN. *By* DAVID FERRIER, M.D., F.R.S.
With numerous Illustrations. London: Smith, Elder & Co. 1876.
Pp. 323.

IN a former review in this *Journal* "On Recent Advances in Cerebral Physiology and Pathology," the present writer sought to illustrate, from recent writings on this subject, the direction which the study of the functions of the nervous system is taking at the present time. (See this *Journal* for 1874, p. 101.) It was shown that in the philosophical system of Herbert Spencer, in the clinical studies of Hughlings Jackson, and in the experimental researches of Fritsch, and Hitzig, and Ferrier, there was visible the same tendency to present the nervous system as composed of various lower and higher orders of centres, each lower centre being, as it were, comprised and more highly organized in the successive higher ones. It was shown that while, till very recent years, the demonstration of this progressive amplification of the centres had stopped short at the great central ganglia of the brain; there was now a further stage reached, and the convolutions themselves have now been shown to be only higher centres, having similar functions to the lower ones, but with more complete organization. In this work of Ferrier's we have this problem wrought out in a systematic form, and an attempt made to determine the functions of the various parts of the central nervous system by experiment and otherwise.

The work has for its principal subject the functions of the brain, with which the name of Ferrier has been so much identified of late years, but as it is the plan of this book to show that the higher centres are evolved out of the lower, so it is necessary to begin with some description of the lower centres. The sketch of the functions of the lower centres is, however, very cursory, and can only be accepted as an outline picture. In the present review it is proposed to give something like an abstract of the general plan and contents of the work, dwelling more particularly on those parts which are the newest and most important.

In the first chapter there is a sketch of the structure of the brain and spinal cord, which we must regard as somewhat perfunctory, and as exhibiting several evidences of carelessness. We presume that as this forms no necessary part of the task of the author, he has hurried through it as rapidly as possible.

In the second chapter the functions of the spinal cord are briefly summarised, this being also preliminary to the principal subject in hand. We are all familiar with the reflex function of the cord, and we know how, when the control of the brain is removed, the cord being, as it were, left free to act for itself, this reflex action becomes more prominent. The influence of higher centres upon lower ones is shown in this very thing. We know, from our own experience, that the reflex action induced by tickling the soles, and which has its centre in the cord, may be restrained by an effort of will, the higher centres in the brain controlling or inhibiting the lower centres in the cord. This is also proved experimentally in the following way:—A frog is suspended by the head, and its legs, which hang down, are allowed to dip into a vessel containing dilute acetic acid. After a certain interval the legs are withdrawn, and the average duration of this interval is determined by repeated trials. The experiment is repeated after division of the cord below the medulla oblongata, and it is found that the interval between the contact with the acid and the withdrawal of the legs is considerably shortened, and the action is more energetic. Which means, of course, that, the influence of the brain being withdrawn, the reflex action of the cord is more prompt and more vigorous. It is to be remembered also in relation to what comes after, that in animals so low in the scale as the frog, the reflex actions of the cord have more of an apparently purposive character than in higher animals. A decapitated frog, it is well known, has still the power of using its hind legs, to remove, it may be, any irritant applied to the

thigh, and not only that, but when the corresponding foot is amputated, or by repeated trials has become tired, the animal may use its other foot for the purpose. This shows that in the spinal cord of these animals there are centres having a high degree of adaptation to the necessities of the organism, and that the centres in the two halves of the cord have a mutual action on one another, irritation on one side of the body causing action on the other. It is argued in this work, that these actions, though apparently purposive, are not really evidence of psychical or intelligent action on the part of the animal. That the cord at least has no sensory function is shown in an experiment by Goltz, and it is difficult to believe in any intelligent action without sensation. All we can say is that in these lower animals the reflex action of the cord shows more of independent adaptation than in those higher in the scale, but that there is no proof of the existence of centres for proper voluntary action in the cord.

The functions of the *medulla oblongata* may be best summarised in the words of the author: "The medulla oblongata is thus a co-ordinating centre of reflex actions essential to the maintenance of life. If all the centres above the medulla be removed, life may continue, the respiratory movements may go on with their accustomed rhythm, the heart may continue to beat, and the circulation be maintained; the animal may swallow if food be introduced into the mouth, may react to impressions made on its sensory nerves, withdrawing its limbs or making an irregular spring if pinched, or even utter a cry as if in pain, and yet will be merely a non-sensient, non-intelligent reflex mechanism." It is only necessary to add that the medulla oblongata is probably the co-ordinating centre of the muscular movements concerned in the production of articulate speech. The chief evidence of this is furnished by the diseases known by these various names: Duchenne's paralysis, glosso-labio-pharyngeal paralysis, and bulbar-paralysis, in which the disease seems to select the centres of innervation of the muscles of articulation, "so that there is gradual and progressive paralysis of the tongue, palate, lips, and laryngeal muscles, rendering articulation, and ultimately deglutition, impossible."

When the author comes to the functions of the *mesencephalon* and *cerebellum* he enters upon a more congenial task, because he now gives the result of his own observation. The parts here concerned are the corpora quadrigemina, pons varoli and the cerebellum. It is consistent with what has been said of the spinal cord, that "the phenomena manifested by animals

deprived of their cerebral hemispheres vary considerably in the different classes of vertebrate animals; differences which mainly depend on the degree of solidarity, as Valpian well expresses it, which subsists between the individual centres of the cerebro-spinal system, according as we ascend or descend the animal scale." As this idea will come up frequently in our further progress, it may be well to indicate here what is its general bearing. As we ascend in the animal scale the lower centres seem to be more and more dependent on the higher, so that in the highest animals (in man), while it is to be presumed that many apparently purposive actions are done through the centres, let us say, of the middle brain, yet these actions are not capable of being performed when the middle brain is cut off from the cerebral hemispheres. There is such an intimate connection established between the two sets of centres that the lower being cut off from the higher cannot act alone. We shall see numerous instances of this as we proceed.

At this point, to begin with, there seems little difference at first sight between a frog deprived of its cerebral hemispheres and one with them. The brainless frog will maintain its normal attitude, and resist all efforts to overturn it. If it is stroked in the proper way it will croak, if its foot is pinched it will hop away. It can swim, it can see objects and avoid them, it seems to conduct itself like an ordinary frog. The difference is that it has no spontaneous action. It sits still and apathetic unless disturbed, it has no desire to eat or do anything, it has no volition. It is very similar with fishes and pigeons. A pigeon can maintain or regain its equilibrium. When thrown into the air it flies with all due precision, it can walk, and see, and hear, but it is completely apathetic, and can only be made to do these things when roused in some way. In rabbits and guinea-pigs removal of the hemispheres exercises much more immediate influence on the power of action than in these lower animals, but they soon regain a very considerable control of their actions. They retain the power of maintaining their equilibrium, they can run, see, hear, smell, and taste. They have, however, a greater degree of muscular paralysis, and a diminished power of accommodating their movements to external circumstances. A rabbit, for instance, when the foot is irritated will bound forward, and rush along till it strikes its head against some obstacle; it has not the power, like frogs and fishes, to avoid obstacles. In cats, dogs, and higher animals the prostration is so great, and there is such interference with motor power, that the independent activity of the lower centres, so far as it relates to the main-

tenance of equilibrium and co-ordinated progression, practically ceases to exist." In all the actions exhibited by animals deprived of their cerebral hemispheres we have this in common, that however adapted these actions may be, they only occur in response to immediate stimuli from without; they do not apparently originate of themselves. A frog will swim if put in water, but the water bathing its skin sets up this action reflexly, and all the actions concerned seem to be purely automatic or excito-motor.

If now we inquire as to the individual forms of functional activity presented by animals to whom the mesencephalon and cerebellum remain along with the medulla oblongata and spinal cord, it appears possible to classify them under these three heads: 1. The function of equilibration, or maintenance of the bodily equilibrium. 2. Co-ordination of locomotion; and 3. Emotional expression.

The maintenance of equilibrium is a most important function, on whose automatic performance depend many of the more highly organized and more purely voluntary actions. It is generally known that the maintenance of equilibrium by an animal is closely related to the general impressions of touch, and to visual impression. In locomotor ataxia, for instance, there is an interference with the conveyance of impressions of contact, and we know that equilibrium is only maintained by the most painstaking use of visual impressions. When the eyes are closed the ataxic patient loses all power of equilibration. Of late years another organ has been shown to have most intimate relations to this function, namely, the labyrinth of the ear. Injury to the semicircular canals in animals causes them to lose the power of maintaining their equilibrium. Pigeons, in which these canals are destroyed on both sides of the body, are seized with attacks of vertigo, in which they stagger or fall. If they be thrown into the air they make useless flappings with their wings, but fall like a stone. Much study has been of late devoted to the mechanism by which the semicircular canals give origin to impressions through which the centres concerned in the maintenance of equilibrium are stimulated. One of the most ingenious of these studies is that of Professor Crum-Brown, of Edinburgh.

These observations are also of great interest in relation to the disease of the semicircular canals in the human subject, commonly called Menière's disease. In this affection the patient is troubled by sudden attacks of vertigo and sickness, generally preceded by or associated with ringing or pain in the ear.

The maintenance of the equilibrium in animals seems, therefore, to depend on an automatic mechanism, by means of which impressions originating in the organs of touch, of vision, and in the labyrinth of the ear, stir up certain co-ordinating centres in the middle brain. These centres automatically bring into play those muscles which are capable of counteracting the tendency to that particular disturbance of the equilibrium which has given rise to the sensory impressions.

The function of co-ordinating locomotion is in many respects similar to that of equilibration. Many of the lower animals are capable of locomotion after removal of the cerebral hemispheres, such as fishes, frogs, birds, rabbits; and even in higher animals, although the centres are more consolidated, yet our own experience seems to prove that we can walk with perfect precision when the cerebral hemispheres are altogether engaged in some other occupation.

Emotional expression seems also dependent on the mesencephalon; and, like the other two functions, it seems to be automatic. "Emotional expressions may be elicited in animals deprived of consciousness by removal of their cerebral hemispheres."

The corpora quadrigemina and cerebellum have been hitherto considered together; and it is just a little difficult to disentangle the different divisions of the above three functions which belong to these ganglia respectively. The functions themselves to a certain extent overlap, for the maintenance of equilibrium will be effected by combined movements very similar to those of locomotion. It might therefore be expected that, supposing there were a special centre for the co-ordination of locomotion, and one for the maintenance of equilibrium, the latter would act mostly through the former, and be thus dependent on it. Again, locomotion cannot be effected without the equilibrium being maintained; and in this way we have a kind of mutual dependence of the two functions.

The result of experiment seems to show that the cerebellum is specially the organ of equilibration. "Mechanical lesions of the cerebellum induce, in the first instance, if not permanently, such disorders of equilibrium that station and locomotion become difficult, and sometimes altogether impossible." The muscles are not paralysed; nor is the power of exciting properly co-ordinated movements lost. The animal is still able, by an exercise of will, to walk or fly or swim; but these movements are no longer adjusted to the

position of the body in space, and the animal staggers or reels or flounders about. Lesions of the cerebellum in man cause the person affected to have a "reeling and uncertain gait, described by Hughlings Jackson as the 'walk of a man slightly drunk.'"

But experiments by the author, in which the cerebellum of various animals was stimulated by electrification, bring the relations of this organ into still closer relations to the function of equilibration. It seems that when various parts of the cerebellum are irritated in monkeys and some other animals, movements of the eyes and head and limbs are produced. There are limited centres in the cerebellum which can be separately stimulated, and each centre produces a distinct but combined set of movements. The movements appear to be such as would be made in an effort to maintain the equilibrium of the body against an attempt to overturn it. "The cerebellum would, therefore, seem to be a complex arrangement of individually differentiated centres, which, in associated action, regulate the various muscular adjustments necessary to maintain the equilibrium of the body; each tendency to the displacement of the equilibrium round a horizontal, vertical, or intermediate axis acting as a stimulus to the special centre which calls into play the antagonistic or compensatory action.

"Every form of active muscular exertion must tend to overthrow the balance; and we should therefore expect, on the above hypothesis, that the cerebellum would be developed in proportion to the variety and complexity of the muscular activity of which the animal was capable—a relation which is fully borne out by the facts of comparative anatomy (Owen). We should further expect to find that a lesion which annihilates the functional activity of any of the individual cerebellar centres should manifest itself in a tendency to the overthrow of the balance in the direction naturally opposed by this centre. This also is in accordance with the facts of experiment. We have seen that stimulation of the anterior part of the middle lobe excites the muscular combinations which would counteract a tendency to fall forwards. Hence destruction of this part shows itself in a tendency to fall forwards," &c.

These experiments, on the one hand of stimulation of the several centres, and on the other of destroying them, point to the same conclusions; and they seem to indicate that the cerebellum is the centre of a purely automatic arrangement by which the equilibrium is maintained, this arrangement

being as independent of the will as the simplest reflex actions. While this automatic mechanism exists, it must be remembered that its functions may be in part taken up by conscious efforts. If the cerebellum be destroyed, the function will be for a time probably lost more or less completely; but there will be an apparent recovery. It will be long before conscious efforts will acquire the dexterity of the automatic mechanism; but even if, through time, this point be reached, "the constant attention necessary to prevent displacement of the equilibrium would be a heavy strain on the animal's powers, and it would be quite in accordance with this condition that prolonged or varied muscular effort should cause great apparent exhaustion." This has been actually found to be the case by Weir-Mitchell in the case of some pigeons, which recovered after removal of the cerebellum. "In these he observed that great fatigue was induced by active muscular exertion; and on this he founded his theory that the cerebellum was a source of energy to the other nerve centres. By sparing higher centres, the cerebellum may in one sense be regarded as a source of energy; but the real cause of the fatigue observed in the case of his pigeons is not the loss of any hypothetical reservoir of energy which is supposed to be continually streaming out, but a direct consequence of strained attention and conscious effort."

We have gone with some detail into the author's views as to the functions of the cerebellum, as they seem to offer one of the most consistent of the many hypotheses which have been started in regard to this organ.

Little remains to be said as to the corpora quadrigemina. They seem to be the centre of the co-ordination of locomotion, and to some extent of emotional expression. Being the centre of co-ordination of locomotion, we should expect, according to what has been already remarked, that the cerebellum would be to a certain extent dependent upon it; and we are not surprised to find that destruction of the corpora quadrigemina causes disturbance of equilibration.

The most important part of Ferrier's work is that on the functions of the cerebrum; and it occupies fully half the entire work. The views adduced are based chiefly on experiments in animals; but reference is also made frequently to observations in human pathology. The modes of experimentation adopted in elucidation of the present subject were chiefly these two—electric irritation and extirpation. These two methods were used mutually to correct or corroborate the results attained by one or other separately. The author

here justifies his method of electric stimulation against some of the strictures which have been made on it; and, confirmed as the results have been, we think that in their main outline, at least, the experiments are worthy of confidence.

The effects of electric irritation on the brains of monkeys, dogs, jackals, cats, rabbits, guinea-pigs, rats, pigeons, frogs, and fishes are here given; but it will not be expected that we should enter into the details of these observations. The main general results may be briefly referred to.

Perhaps the most interesting, and at least the best established part of the subject, is that concerning the motor centres in the cerebrum; and with these we shall begin. It is shown that electric irritation of the brain of the monkey at certain definite points in the convolutions, which, speaking generally, bound the fissure of Rolando, gives rise to certain definite and constant movements of the hands, feet, arms, legs, facial muscles, mouth and tongue, &c. In cats, dogs, jackals, and some other animals, irritation of corresponding parts produced movements which were in many respects homologous. This portion of the surface of the brain, corresponding with the convolutions around the fissure of Rolando in the monkey and in man, may be denominated the motor part. If this part of the brain is really composed of motor centres, as the electric experiments indicate, then, unless some satisfactory explanation can be found, destruction of it should produce motor paralysis. In the case of monkeys and of man, destruction of the entire motor part of the convolutions produces permanent motor paralysis of the opposite side of the body. A most instructive experiment is recorded by the author in illustration of this part of the subject. He exposed and irritated the right hemisphere of a monkey, with the usual results. The animal was allowed to live on. In a day or two signs of inflammatory irritation and suppuration occurred in the form of choreic spasms and epileptiform convulsions. In a day or two more hemiplegia set in, and extended over the whole left side, remaining on till death, which occurred nine days subsequently, while tactile sensation, sight, hearing, smell, and taste were retained. Post-mortem examination showed that the exposed convolutions were completely softened, but the rest of the brain free from injury. "In this we have a clear case, first of vital irritation producing precisely the same results as the electric current, and then the destruction by inflammatory softening, resulting in complete paralysis of voluntary motion on the opposite side of the body, without affection of sensation."

Human pathology confirms these results. "Numerous cases might be given where, from softening of the cortex of the hemisphere, invading the homologous motor regions of the human brain, permanent hemiplegia has resulted;" and the author adduces some of these cases. It is to be observed that, in experiments on monkeys, it was not possible to determine whether the paralysis resulting from destruction of the motor regions was permanent or not, as the animals only lived a limited time. But in one of the cases in man adduced here there was paralysis lasting six years, and due to destruction of the motor convolutions, without the corpus striatum or optic thalamus being involved.

But the motor region of the surface is not merely a general centre of motion: it is rather, as has been already hinted, a collection of individual centres, which are related to certain definite movements of the limbs, head, or body. There is a centre, for instance, irritation of which in monkeys causes action of the biceps, or supination and flexure of the forearm. It might be asked, Does destruction of such a centre as this produce paralysis of that action, and of it alone? The answer may be given in the words of the author in describing an experiment in a monkey:—"The exact spot being determined by the application of the electrodes, it was then accurately cauterised, just sufficient to destroy the cortical grey matter. This operation immediately manifested itself in paralysis of the power of flexing the right forearm." It would therefore appear that, in the monkey, destruction of the individual centres produces paralysis of the movements produced by irritation of these centres.

These various centres have been very carefully determined in the monkey; and it may be interesting at this stage to indicate the analogous regions in the human brain, which are probably the seat of similar centres. Those of our readers who have Ecker's excellent little book on the convolutions of the human brain, or who know his nomenclature, would do well to read this paragraph with that book beside them. Those who are not in a position to do this had better pass over this paragraph. The postero-parietal lobule of Ecker is the centre for movements of the opposite leg and foot, such as are concerned in locomotion. The convolutions bounding the upper extremity of the fissure of Rolando include centres for various complex movements of the arms and legs, such as are concerned in climbing, swimming, &c. The posterior extremity of the superior frontal convolution, at its junction with the ascending frontal, is the centre for

the extension forwards of the arm and hand, as in putting forth the hand to touch something in front. The part of the ascending frontal just behind the upper end of the posterior extremity of the middle frontal, is the centre for movements of the hand and forearm in which the biceps is particularly engaged—viz., supination of the hand and flexion of the forearm. Immediately beneath this centre, and still in the ascending frontal convolution, are two centres for the elevators and depressors of the angle of the mouth respectively. Then there is a centre generally known as Broca's convolution, including the posterior extremity of the third frontal convolution where it abuts on the fissure of Sylvius, and overlaps the island of Reil, for the movements of the lips and tongue, as in articulation. Immediately behind this, and continuous with the ascending parietal convolution, is the centre for the platysma, retraction of the angle of the mouth. Along the ascending parietal convolution are centres for movements of the hand and wrist. There is, further, a centre situated in the posterior half of the middle and superior frontal convolutions, for lateral movements of the head and eyes, with elevation of the eyelids and dilatation of the pupil—movements expressive of keen attention.

It is now time to remark that, while irritation of corresponding centres in animals lower than monkeys produces similar motor results, yet that destruction of these centres does not lead to precisely the same effects. From what has gone before, it will be expected that the higher the animal the more will the movements be under the direct control of the cerebral centres. "The more the movements are dependent on volitional control, the more marked and enduring is the paralysis resulting from destruction of the cortical centres, or centres of voluntary motion." In the lower animals, in fact, the movements are much more organised in the lower centres, the corpus striatum, or others still lower; and so it happens that destruction of the motor regions in the dog does not produce absolute motor paralysis. There is at first a partial paralysis; but by degrees this is recovered from, and the dog appears to have lost nothing. This recovery is probably explained by the organisation of the movements in the corpus striatum; and our author ventures to predict "that any special tricks of movement which a dog may have learnt would be as effectually paralysed by removal of the cortical centres as the varied and complex movements of the arm and hand of the monkey by the same lesion," these highly volitional acts being organised in the

convolutions. In rabbits destruction of the motor regions produces still more transitory results; while in the fish, frog, and pigeon removal of the entire cerebral hemispheres produces little or no appreciable motor paralysis. All these circumstances admit of explanation on the view already so often referred to—that, as we ascend in the animal scale, we have the higher centres representing more and more complex developments of the lower ones; and the more developed these centres become, the more do they dominate the lower ones.

There is much that is new and interesting in the part of the book in which the sensory centres are discussed. The first of these is that situated in a part of the brain corresponding with the angular gyrus which surrounds the upper extremity of the fissure of Sylvius. Irritation of this centre produces in animals “movements of the eyeballs, frequently associated with movements of the head to the opposite side, and very often contraction of the pupils.” But these are all reflex movements: the centre is really the centre of vision. Its destruction in animals causes blindness in the opposite eye. This is rapidly recovered from if the convolution is destroyed only on one side; but there is permanent blindness if both are destroyed, but without any motor paralysis either of the eyes or any other part.

The author also believes that he has discovered the centre of hearing. When the superior temporo-sphenoidal convolution is irritated electrically in the monkey, there is “sudden retraction or pricking up of the opposite ear, wide opening of the eyes, dilatation of the pupils, and turning the head and eyes to the opposite side.” “These phenomena resemble the sudden start and look of astonishment or surprise which are caused when a loud sound is made in the ear opposite the hemisphere which is being irritated.” The conclusion was corroborated by the results of destruction of this convolution. If it were destroyed on both sides, the animal showed no reaction to the usual forms of auditory stimuli.

The centre for tactile sensation is believed to be in the hippocampus major and the uncinata convolution. These parts are so deeply situated that it is impossible to stimulate them without such destruction of parts as to vitiate the experiment; but destruction of these convolutions in a monkey seemed to cause entire loss of tactile sensation on the opposite side. There was at the same time a paralysis of motion; but it was of such a kind as to be referable to the loss of tactile sensation and the consciousness of muscular

contraction. When this region was destroyed on one side, the loss of sensation on the opposite side was persistent, differing in this respect from the loss of sight from unilateral destruction of the angular gyrus.

The senses of taste and smell are localised, by means of both irritative and destructive experiments, in the subiculum cornu Ammonis; but it was found impossible to determine accurately the limits of each.

The localisations already described nearly exhaust the middle parts of the hemispheres; but there still remain the occipital and frontal regions. The functions of these are not so plain. Complete destruction of the occipital lobes caused no motor paralysis. The only distinct difference observable in animals so mutilated seemed to be absence of the appetite for food; yet there was an exception even to this, for in a monkey whose occipital lobes were completely destroyed, and which yet recovered, the appetite for food was lost only for five days. Notwithstanding this apparent exception, which the author endeavours to explain, he still believes that the occipital lobes are in all probability the centres in which are localised the sensations connected with the organic functions, and of which hunger is the most obvious; but there are so many subjective feelings connected in some way with the condition of the viscera, that it seems impossible by mere experimentation to solve the problem. Destruction of the occipital lobes does not interfere with the sexual appetite.

The frontal regions of the brain give, for the most part, negative results on stimulation, and their destruction was not followed by any definite physiological results; but yet the author considers that these parts contain centres related to the intellectual processes. Monkeys in which these parts were destroyed "had lost, to all appearance, the faculty of attentive and intelligent observation."

In regard to the basal ganglia of the cerebrum, the corpora striata and thalami optici, the author believes the former to be purely motor, and the latter purely sensory. He points out, however, that both here and in the spinal cord it is much more difficult to interrupt sensation by cutting the sensory fibres than to interrupt the communication of motor impulses. "A much more complete disorganisation of the sensory paths is necessary, in order that sensation may be abolished." And so it happens that, while even partial lesions of the corpus striatum produce considerable motor paralysis, it requires complete disorganisation of the

optic thalamus to produce hemianæsthesia. These ganglia contain centres which, in a less advanced form, represent the functions possessed by the convolutions; and in animals whose cortical centres are not highly evolved, these basal ganglia will present a proportional degree of independence. This has been already referred to; but it may be remarked here that Nothnagel, having overlooked this fact, has laid too much stress on the results of certain of his experiments on rabbits. He finds that destruction of the optic thalami does not cause loss of sensation in these animals; but this simply means that in these lower animals the centres lower down are more automatic than they are in higher animals. It is similar with the corpora striata. "In the rabbit the powers of co-ordinated locomotion are not abolished either by destruction of the corpora striata, or cortical centres, or both. In the dog the destruction of the corpora striata completely, for the time at least, paralyses all the powers of movement, which are only partially or transiently affected by removal of the cortical centres; while in the monkey and in man the destruction of the corpora striata adds but little to the completeness of the motor paralysis which results from extirpation of the cortical centres."

The last chapter in the body of the work is one in which the functions of the cerebral hemispheres are considered in their psychological aspects. This chapter is very closely reasoned; and as it is mainly speculative, the reader is referred to the work itself, as this part of it hardly admits of abstraction. It is assumed that "in their subjective aspect, the functions of the brain are synonymous with mental operations;" and it is also very cogently argued that, as most of our ideas and thoughts involve widely divergent sensory and motor impressions and impulses, so are the different parts of the brain intimately connected with each other. In this relation it is an almost necessary assumption that the changes in the brain substance concerned in the reception of a sensation, or the development of a motor impulse, are, as it were, organically registered. Memory is dependent on this organic registration of sensations and motor impulses; and it is because we can, as it were, fall back on this organic memory that we can have ideas or conceptions. The impressions or impulses are registered at the seat of their reception or origin; and so it will happen that destruction of a given centre will not only destroy the present powers of that centre, but will destroy the memory stored up in it. Thus, while the destruction of the eye renders a person

blind, but leaves him, it may be, with all the ideal visions of Milton, the destruction of the sight-centres in the convolutions renders one incapable of thinking or representing visible things: his visual memory is gone. These ideas are in this chapter considerably elaborated; and in one part of it the subject of aphasia is discussed in a suggestive manner. But we cannot follow the author through these interesting pages, as our review has already attained unusual dimensions.

Two supplementary chapters are added—one giving a diagrammatic summary of the functions of the nervous centres, which will be useful for reference to those who have read the book, and the other going into the subject of cerebral and cranial topography. This last chapter carries the results of experiment on animals to the human brain, and shows the regions in it analogous to those in which the functions have been determined in the brains of the lower animals. The author in his nomenclature follows Ecker; and the points brought out here will be of great use to pathologists who desire to test the facts of observation on the post-mortem table.

It may be further noted that the author proposes to furnish "another treatise specially devoted to the consideration of diseases of the brain," for which work we shall look with some interest. For though there is much in the present volume which may need confirmation before it is considered fully established, yet there can be no mistaking the truly scientific method which has been adopted in the experiments on which the work is based. We opine that a mind which has been trained by these careful experiments will be able to bring lessons out of clinical and pathological facts which cannot fail to be of great importance.

II.—CLINICAL STUDIES, ILLUSTRATED BY CASES OBSERVED IN HOSPITAL AND PRIVATE PRACTICE. *By* SIR JOHN ROSE CORMACK, K.B., M.D. Two Vols. London: J. & A. Churchill. 1876.

INTO these two volumes of Clinical Studies Sir J. Rose Cormack has gathered all the contributions he has made to medical literature within the last thirty-five years. Most of the articles belong to an early part of this period, and they have been reproduced pretty much as they originally stood. They range over the whole realm of medicine, and present matter of very varied interest. Some of them might have been omitted, however, without any detriment to the book or the author's fame. But

laying such instances aside, the volumes bear on almost every page the marks of a wide experience and careful observation. One or two of the "studies" stand out prominently, not only from the vital import of the subjects themselves, but also from the manner in which the author has handled them. We will speak of these specially.

An account of the epidemic fever in Edinburgh in 1843 opens the series. Relapsing fever had been almost entirely unknown in Britain from 1828 up to 1843, and when it broke out in Edinburgh in the latter year it was looked upon as a new type of fever. Dr Alison, who must have seen it in 1828, failed to recognise it on its first appearance in 1843, and called it a "*nova febris*." It was evidently under the notion that it was such that Cormack reported his cases, and drew up his generalisations upon them; and viewed in this light, it must be confessed that his account of this epidemic shows him to be a very able observer, for with some very slight modifications his account affords a very truthful picture of the relapsing fever which has, at various times since he wrote, swept over the land. The only point on which he gave forth an uncertain sound was whether it was essentially different from typhus. The occasional occurrence of a rash that could be described as measly, and the close association in many instances of the two fevers, led him to suspend his judgment and inquire whether the two fevers, though apparently so different, were not the results of modification of the same morbid poison. He states in a note that soon after the publication of his memoir he became quite satisfied of the non-identity of the two.

The articles on diphtheria are to us the most interesting in the volumes. We fancy the author himself would consider this his pet subject, and what he writes on it is the product of his matured judgment. The cases which form the basis of the papers are reported in a very able and minute manner, and the many facts drawn from extensive researches in the literature of the disease show that it has been elaborated with especial care. In it the question of the identity or non-identity of membranous croup and diphtheria crops up, and is discussed at some length. Probably to some extent, from having been brought into close contact with French doctrine, he has adopted without reservation the idea of Bretonneau and Trousseau, that membranous croup is not an advanced stage of inflammatory croup, but the characteristic manifestation of diphtheria. We confess that to our thinking this position is not quite demonstrated, and although in recent years Sir William Jenner and Dr George Johnson have given in their adhesion to this doctrine, still

there are many able observers in England who cannot yet accept the identity of the two; and certainly if the character and succession of the symptoms are closely scrutinised, they seem to have some ground for their scepticism. Diphtheria is, as a rule, most insidious in its onset, the throat affection is rarely the primary symptom, the excessively depressed condition of the patient shows that he is labouring under a grave constitutional disorder; it is frequently accompanied by albuminuria, swelling of the glands in the submaxillary region, and often also in the axilla and groin; apt to be followed by paralytic sequelæ, and death supervenes in the great majority of cases, not from suffocation, but from mere poisoning of the constitution. Add to all this, that it is epidemic and contagious. And yet there are cases attended by false membrane in the larynx, which present a marked contrast to all this. They commence with pronounced laryngeal symptoms, associated with high fever; there are not marked signs of constitutional depression; the cases are sporadic and do not spread, and apnoea is a very frequent termination. On dissection a false membrane is found in the larynx and trachea. Is this diphtheria? We think it is an open question. The membrane may be of the same nature in the two cases, but the symptoms are very different, and form a just ground for distinction.

His treatment of diphtheria consists mainly of alimentation, stimulants, attention to hygienic conditions, and tracheotomy if necessary. He advises only the mildest topical applications to the throat, and indicates that this is now the prevailing opinion among French physicians. The medical mind in France must thus have undergone great modification since Trousseau insisted on the application of the strongest caustics for the destruction of the membrane, and as he thought, in some cases to mitigate the general disease. In the great majority of cases this form of treatment is worse than useless. The patients do not, as a rule, come under the eye of the physician till the membranous formation has made some progress. It cannot all be reached by topical applications, and the mere destruction of part of it will afford little benefit; and what is destroyed is in many instances quickly reproduced. If the exudation is found to be small and localised, then we think there might be advantage in destroying it, but in all other cases we agree with Cormack, that only mild applications should be employed.

Puerperal convulsions are the subject of an article, with two cases as its text. They both occurred in primiparæ, and this is quite in accordance with experience. He attributes them in

such cases to the unyielding condition of the abdominal walls, which do not relax readily under the pressure of the expanding womb, and so there is much pressure exercised on the great veins, giving rise to renal congestion. He says "the œdema, albuminuria, and convulsions are not in the puerperal woman pathognomonic of any organic disease of the kidney." This is all quite true; but a fact to which he does not call attention is that a considerable number of cases of Bright's Disease seem to have their starting point in the dropsies of successive pregnancy. We can recall several, and lately had an opportunity of seeing such a case. A woman pregnant for the third time was seized at the sixth month with convulsions, which lasted for three or four days, and then passed off under treatment. The history bore that she had dropsy of the feet, legs, and face in both the former pregnancies, which passed away after delivery; and the most careful scrutiny of the facts could detect no other clue to the kidney disease under which she was now labouring. The child usually dies if the convulsions are violent; but in this case we heard the foetal heart quite distinctly three weeks after the attack. Abortion is the rule, and when this takes place after the death of the child, Dr Cormack remarks "there is inevitable toxæmia, which may be looked on as nature administering a poison for the purpose of accomplishing abortion." He need not, we think, have wandered so far for an explanation; may not the dead foetus be expelled on account of it acting as a foreign body in the uterus?

There are a series of interesting articles on the "Presence of Air in the Circulation." The first of these was the author's graduation thesis at Edinburgh, and in it he controverts the notion of Bichat, that death in such cases is brought about by the poisonous action of the air on the brain. It is due to paralysis of the heart from over distension. Into this question we don't feel qualified to enter. These articles, however, contain descriptions of some experiments on animals that would make the anti-vivisectionists "gape and stare." There are also articles on cholera, general paralysis, congenital syphilis, &c., but they contain nothing of very special import, although they are very clearly detailed.

The volumes are well written, easy to read, and well worth a perusal.

- III.—1. COMPENDIUM OF HISTOLOGY. Twenty-four Lectures by HEINRICH FREY, *Professor*. Translated from the German, by permission of the Author, by GEORGE R. CUTTER, M.D., *Assistant-Surgeon New York Eye and Ear Infirmary, &c., &c.* Illustrated by 208 Engravings on Wood. London: Smith, Elder & Co.
2. HISTOLOGICAL DEMONSTRATIONS: A Guide to the Microscopical Examination of the Animal Tissues in Health and Disease, being the substance of Lectures delivered by GEORGE HARLEY, M.D., F.R.S., *formerly Professor in University College, London, &c., &c.* Edited by GEORGE T. BROWN, M.R.C.V.S., *Professor of Veterinary Medicine, &c.* Second Edition. Longmans, Green & Co., London.
3. A COURSE OF PRACTICAL HISTOLOGY. By EDWARD ALBERT SCHÄFER, *Assistant Professor of Physiology in University College, London.* Smith, Elder & Co., London.
4. OUTLINES OF PRACTICAL HISTOLOGY. Being Notes of the Histological Section of the Class of Practical Physiology held in the University of Edinburgh. By WM. RUTHERFORD, M.D., F.R.S.E., *Professor of the Institutes of Medicine, Edinburgh University, &c., &c.* Second Edition. J. & A. Churchill, London.

OF late years it has become apparent that students must learn Histology both theoretically and practically, and the want of text-books has been much felt. This want has now been abundantly supplied, as within the last few months no less than four works of this class have appeared. Only one of them, however, is entirely new—Mr Schäfer's; Professor Frey's is a condensation of his larger well-known work; and the remaining two are new editions. Although these may all be classed as Histological Text-books, they differ widely in the way in which they treat the subject. Professor Rutherford and Mr Schäfer confine themselves entirely to the manipulative processes necessary for practical histological study. Professor Frey omits almost all mention of processes, and describes what is to be seen, while Dr Harley and Mr Brown attempt to combine the two—unfortunately with scant success. We are inclined to think that, from a purely educational point of view, such a combination, if well carried out, would possess advantages wanting in the separate system. It would be more economical for the student to get one book than two; would enable him constantly and easily to refer to what he should see in the specimen he is examining; and the type might be so arranged as to avoid confusion. By this means a more useful book would be produced.

The objects sought to be attained in the study for which these are meant as text-books are two-fold—first, a personal knowledge of the microscopic appearances of normal tissues; and, second, an intimate familiarity with the processes and methods required to display these structures. Now, to divorce

these from each other, as the tendency now is, seems a grave educational mistake.

This tendency shows itself in the attention and space devoted in systematic courses, both of anatomy and physiology, to theoretical histology, and the complete concentration of energy in practical histology upon mere preparation of specimens—the direction in which this class of instruction at present inclines to exceed.

Only one of the books which head this article attempts a combination of the two, and as we have already indicated, the increased value thereby given to it is completely neutralised by the character of the contents. Dr Harley, in the preface to this edition, states that the work has undergone careful revision, and by this we presume he means has been brought up to date. We have failed to find any internal evidence of such a revision, and indeed of the introduction of anything whatever which has been added to our knowledge either of the methods or the teachings of histology during the last decade. It has been interesting to us, in reading the book, to have so forcibly brought home to us how much of our present knowledge we owe to these ten years; but it was scarcely worth while to publish a new edition for the express purpose of impressing the rapid strides recently made in histology by the unique method of omitting all mention of them.

It would be wasting our readers' time to dwell longer on this unsatisfactory book. Suffice it to say that it recommends observing fresh tissues in *water*; scarcely mentions the indifferent fluids; barely notices staining; and ignores freezing microtomes. It is true that it is intended for veterinary as well as medical students, but we fail to see that this is a valid excuse for the issue of what is practically a reprint of an antiquated book, under the misleading title of a "New Edition." The other three are good—each in its way. Great judgment has been exercised by Professor Frey in his condensation of his larger work, and the translator has done very nearly complete justice to the original. One thing, however, strikes us as undesirable, and the same remark applies not only to this but to almost all recent physiological and histological works—we mean the absolute adoption of the decimal system of weights and measures. No doubt it will soon be scientifically universal, but at present the student is much more familiar with our national system of mensuration, and the only way we can hope to accustom him to the other is by giving all measurements side by side in both. It is now becoming acknowledged that in medical education so much has to be learned in so short a period,

that everything which can save the student time and labour should be done for him. It is all very well to say, "He is much the better of working out the calculation for himself;" but we all know that not one in 500 will do so. Therefore we are convinced that the extra trouble of reduction to fractions of an inch of all fractions of a millimetre given in histological works would very much enhance the value of the books, and conduce to greater accuracy on the part of the student. Apropos of this, a table for reducing high fractions of the smaller metric weights and measures to English equivalents would be of immense use to all engaged in microscopic work. Such a table may exist, but we have hitherto failed to find it.

Professor Frey's work then gives a succinct account of all that it is necessary for the student to know about minute structure, and has the great advantage of being quite up to date.

Rutherford and Schäfer's books are so much alike, both in plan and contents, that it is difficult to say which is the better.

Rutherford, in his new edition, has introduced a very good account of microscopic optics, which is an advantage, but we cannot say as much for all the other additions. Indeed, we regret that he has enlarged the book so much. His first edition was a fully better student's book, and if he had simply added the few pages on optics, condensed his account of the freezing microtome, which in both editions is unnecessarily prolix, and added and corrected a few minor passages where necessary, he might have kept the book at something near its original price, not double, as it now is—for students an important question. Besides this, the plan of blank interleaving in his first edition was most useful; we regret it has been departed from in favour of a few blank leaves at the end. They are certainly useless, and simply add to the cost and bulk. Taken all over, however, it is a capital work, and one which we can confidently recommend to all microscopic workers, whether beginners or not. A particularly valuable chapter is the one giving directions for hardening the various tissues and organs. In Schäfer's book these directions are scattered, being given under each tissue, but the convenience of having them collected in one place, as Professor Rutherford does, is very great.

Mr Schäfer's book is, upon the whole, more advanced, and not so well adapted for private use. It describes, and expects to be used, apparatus rarely found out of a laboratory, and is more suited for advanced students than beginners. To work through it in an ordinary practical course would be impossible, and hence we believe it will be found less generally useful than Professor Rutherford's.

It is very satisfactory to have two such good books upon a subject of which we may safely say the importance has only recently become appreciated, and either of them carefully worked through, and Professor Frey's work studied along with them, will enable the student to acquire an accurate and extensive knowledge of histology, and train his hand and eye to a manipulative dexterity which cannot fail to be of the utmost advantage to him in the future practice of any branch of his profession.

IV.—EPITOME OF SKIN DISEASES. *By* TILBURY FOX, M.D.

THIS little work, by a well-known author, will commend itself to students and general practitioners as one of small bulk and easy of reference. It is divided into three parts. The first, containing general observations on skin diseases, will be found a useful guide by those entering on the study of Dermatology.

With regard to the classification of erythematous affections given in section IV., we would substitute erysipelas for intertrigo, preferring to regard the latter affection as one of the ordinary varieties of erythema simplex.

Part II. contains "The description and treatment of skin diseases," which are arranged alphabetically. The difficulty of compressing the numerous varieties of these is successfully overcome, and the plan of reference for treatment, to the formulæ in part III., is a good one. A few diagnostic characters with each disease, such as are given in Dr Fox's larger work, and a short account of erysipelas, pernio, and some other complaints, which are common in skin practice, would, we think, have made the little book more complete, without inconveniencing the pocket.

Part III. contains a very complete cutaneous pharmacopœia in brief compass.

V.—A GUIDE TO THE EXAMINATION OF THE URINE, designed chiefly for the use of clinical clerks and students. *By* J. WICKHAM LEGG, M.D., *Demonstrator of Morbid Anatomy in St Bartholomew's Hospital* Fourth Edition. London: H. K. Lewis. 1876.

THIS little book, consisting of a hundred small octavo pages, is admirably suited for lying beside clinical clerks engaged in the hospital routine examination of urine. It is not, of course, in any sense exhaustive, and so it does not supersede the use of other and more elaborate works, but it is a handy book of

reference, in which the most important facts are clearly and carefully summarised. It contains, moreover, just the kind of information often most wanted in a book of reference, and seldom found in such small treatises, viz.—details as to quantitative methods of analysis, directions for the preparation of the copper solution for sugar testing, and such like, of which one may have a general knowledge, although the weights and measures, and exact order to be followed, easily escape the memory. Amongst the changes in this edition may be mentioned the introduction of the hypo-bromite of soda process for the quantitative estimation of urea, a method growing in favour for clinical purposes. It is, as mentioned in the title, chiefly designed for students: practitioners require, as a rule, some more comprehensive work, but even for them the details as to quantitative methods are so compactly arranged that they may be glad to have this little manual beside them.

VI.—THE PRACTITIONER'S HANDBOOK OF TREATMENT ON THE PRINCIPLES OF THERAPEUTICS. *By J. MILNER FOTHERGILL, M.D.* Macmillan & Co., London. 1876.

HOWEVER strongly we may condemn the practice of homœopathy in the present day, we cannot deny that the attempt of Hahnemann to establish a single principle which should rule all therapeutics was a laudable and brilliant conception. It fell upon an age when empiricism was peculiarly rife, and promised the practitioner an easily comprehensible reason for the faith that was in him. That it has not fulfilled this promise it is unnecessary to state, but that it has materially influenced the study and practice of medicine we are bound to admit. The steady advance of pathology and pathological anatomy are not, it is true, direct results, but they form important factors of the mass of material which has followed a more careful introspection of causes. A comparison of descriptions of disease by authors of the last century with those of authors of the present displays an advance not only proportionate in magnitude, but similar in direction. The system of instruction yields evidence of a like transformation. Surgery teaching and apprenticeship work are the relics of the past, as the lecture room, the laboratory, and the microscope are the symbols of the present. In one word, medicine, theoretical and practical, aspires to a place among the sciences. There is, however, reason to fear that in our rapid progress we have scarcely guarded, with sufficient care, those

points of practice which would rather fall under the designation of the art of medicine. It is not that medicine as an art has retrograded, but rather that we have failed in our system of instruction to provide any special means for its perpetuation—the apprentice and his peculiar branch of study have disappeared, and we have nothing in their place. In our scientific ardour we have learnt to dislike even the name of empiricism, and too often to lay the ban upon what is not truly empirical at all. The book before us contains an endeavour to rescue from such condemnation that which is worthy to be preserved. Himself reared in the surgery, under careful and judicious guidance, and perfected in his profession by a peculiarly advantageous academical course, Dr Fothergill is well fitted to exercise an intelligent conservatism which shall not be obstructive.

What he lays before us is not a categorical string of facts, but an endeavour to bind up together modern theory and older empiricism—in many cases to demonstrate that the empiricism of the past is simply an advanced conclusion upon the rationalism of the present.

But although this fairly well expresses the more original parts of his undertaking, it by no means indicates its extent. It may be, and doubtless is, important to preserve this good, but it is even more important to maintain sound practical methods; and of this we are never permitted to lose sight. The aggregation of diseases and their treatment under the heads of physiological systems is merely secondary, and occupies the latter half of the book, while in the former the hard and fast lines of text-book description are abandoned, and a more practical grouping insisted upon. "In early life most ailments take their origin in impaired nutrition. . . . In advanced life ailments usually arise from impaired elimination of waste products." Starting with such generalisations as this, he gradually narrows his circle until the contrast is sufficiently clear, and then indicates the practice. Particular care is taken to give due weight to the influence of diathesis, or constitutional tendency, and repeatedly the reader is warned that the remedies and remedial measures in each particular case must be selected, not merely from a name, or even from a post-mortem pathology, but from a careful estimate of all the forces, morbid or otherwise, which at the moment influence the vital organism.

It is, we fancy, more useful to indicate thus the general tenor of the work than to spend time over peculiarities of detail. When the author ceases to be general, and assumes

his individuality, personal opinion introduces debatable ground, but everywhere it is evident that it is only the principle upon which he *insists*, while he indicates the practice. The large doses of his remedies, the use of arsenic and iron before meals, the application of cold during the eruptive stage of the exanthemata, etc., etc., are matters upon which so intelligent a writer would not wish to dictate.

The one chapter which, as a whole, merits adverse remark, is that devoted to the disease of the cutaneous system. It is almost sufficiently inferior to suggest the workmanship of another and less experienced hand.

Setting aside, then, the main purport of the book, to which we offer our sincere commendation, we turn to notice some shortcomings in the actual execution. We do not doubt that the elementary detail which prefaces each chapter has proved a weariness to the writer, and it may seem trivial to cavil at its occasional verbosity. Nevertheless the book, we are told, is intended for future editions, and the author invites the assistance of his critics. We ask his attention also to the fact, that the single typographical erratum acknowledged is by no means the only one, even if we except the pedantry of "oeconomy" and its congeners.

A good deal of the physiological descriptive matter is loosely detailed—so loosely that at page 31, the *valvulæ conniventes* of the *large bowel* are accused of lodging the *fæces*. Such a glaring misuse of terms would scarcely prove a serious stumbling-block to the majority of practitioners, but in a chapter dedicated to those who are "not very clear in their physiology," or "have grown rusty in practice," it does seem a little out of place.

Less important in actual fact, but particularly distasteful in a work with pretensions to scientific merit, is the gaudy twaddle to which the author occasionally gives way. In speaking of tubercle he says: "It is not a strange intruder of foreign race and blood amidst the mild and inoffensive cell aborigines of a viscus, with grim front and lowering mien—a sort of Spanish *conquistadore* amidst inoffensive and harmless Indians—exerting a destructive and malign influence on all sides and everywhere: it is the 'ne'er-do-weel' of the tissue family, the degraded 'nought weel' of whom there is little hope of regeneration, who will scarcely ever be converted into anything more than a harmless tax upon his blood relations, and *which* much more frequently becomes a source of great danger to them." Even did the metaphor not break down in its

final clause, it would be vastly inferior to the incisive words of Virchow quoted in a foot note : "It is a pitiful production . . . from its very outset miserable."

We have entitled these the faults of a first edition, because they evidence the humanity of the writer. Should he deem us captious or hypercritical we can only plead that he himself says, "there is no credit attached to the mere discharge of duty."

We cannot, then, congratulate him upon a completed task, but we can, and do, wish him all success in an undertaking which commands our warmest sympathies, and which in the present book he has most skilfully outlined.

VII.—A TREATISE ON THE THEORY AND PRACTICE OF MEDICINE. *By* JOHN SYER BRISTOWE, M.D., F.R.C.P., *Physician to St Thomas's Hospital, &c.* London: Smith, Elder & Co. 1876.

ALTHOUGH various new works, and many fresh editions of older treatises on the practice of medicine have appeared within the last few years, it must be confessed that no one of them has proved so entirely satisfactory as to render further attempts in this direction superfluous. The recent revision of Watson's celebrated Lectures must be regarded as wonderfully successful; but the new edition of this great work can scarcely be compared with the pre-eminent position occupied by it in former times. Several of the other treatises have, no doubt, many qualities to recommend them; but they have also serious defects. Some present their information too much in the form of an abstract of new ideas on pathology and treatment, more suitable for year-books than for systematic works—references to written authorities replacing the authority attaching to one who writes from his own well-digested knowledge and experience. This is a fault almost inevitable when the addition of new matter in fresh editions begins to obscure the lines on which the work was originally laid down. Some of the books, again, give too meagre an account of diseases which require considerable preliminary pathological explanations for their proper comprehension; and others, while supplying valuable information as to clinical facts, collected and grouped together in a way admirably adapted for a student in preparing for an examination, seem to fail in that higher co-ordination which is necessary for a great treatise on the theory and practice of medicine. It almost seemed as if our knowledge on particular subjects had outgrown the limits suitable for the exhibition of a compendious view of

the science as a whole. Such a state of matters is highly favourable for the development of cyclopædic works by various writers, or for the production of valuable monographs; but these, from their bulk, are scarcely suitable for our students, except, indeed, for occasional reference.

Dr Bristowe's book is an attempt to produce in one volume of reasonable size a view of the pathology, the symptoms, and the treatment of disease in accordance with the views current among those who have appreciated the great revolutions in medical doctrine and practice which have occurred during the last 20 or 30 years.

The well-known ability of Dr Bristowe as a pathologist, a physician, and a teacher seemed a tolerable guarantee that the work announced by him would be successfully accomplished; and we are glad to say that this is really the case. We know of no work of the kind to which we could refer with more confidence any practitioner who, without being altogether ignorant of the newer pathology, may perhaps be somewhat hazy on many of its bearings on clinical medicine, for a short, yet accurate, and satisfactory statement on such subjects. The work may, indeed, prove to be more popular with such than with the ordinary medical student, for it lacks some of the elements which attract a reader. The absence of typical cases, which the writer has studiously avoided narrating, takes away the surpassing interest which a well-told illustrative case adds to the point being enforced in more systematic teaching. The introductory chapters on pathology, moreover, are apt to repel those who may not yet see their practical importance; and the somewhat general way in which the treatment is sketched may leave the student with a feeling that, as the writer does not give a single prescription, and seldom mentions the dose of a drug, the book leaves him in the lurch at a critical part of his subject.

We do not sympathise much with such possible objections; and, on the whole, we think the author has sketched out for himself a good plan. With regard to treatment, for example, it seems quite clear that when the author names the drugs, states the purpose he has in view in using them, and perhaps indicates at times the doses he would recommend, we get all that we are entitled to expect in a work on the practice of medicine, the details being properly relegated to treatises on *materia medica* and therapeutics.

Some readers, however, will have an opposite complaint against this book—viz., that it does not supply references to the works of the authors cited, and to sources where fuller information may be found. Dr Bristowe has scrupulously abstained from foot-

notes. These, we believe, are generally regarded by students and by many others as a nuisance. But we think some compromise might be made by placing at the beginning or the end of the various chapters a certain selection of the most important books or articles on the subjects dealt with, so that the reader, if he chose, might search for a fuller account of the matter, and that he might find references to the works of those who are cited in the text in connection with special points. Students and young practitioners cannot be expected to know where or how to pursue their studies further; and as many of the statements in this volume refer to the newer pathology, some assistance in this respect is all the more necessary.

A new feature in this treatise is the introduction of chapters discussing the various kinds of tumours and new growths, whether "innocent" or "malignant," atrophy, degeneration, &c., which we have been accustomed to look for rather in surgical than medical works, or in the treatises on pathology. Here again we think Dr Bristowe has done wisely, as it is only by some such general view that the student can follow properly the exposition of such a disease, for example, as splenic leukæmia and allied affections.

We do not propose examining in detail the various sections of this book. Some are, of course, better than others; but we have been much pleased to find throughout admirable expositions, whose chief or only faults were those due to the restrictions necessary for the execution of the work in one volume.

The illustrations are limited to 10 figures, showing pulse tracings and the axes of rotation, &c., of the eyes. These are among the things which are so much better explained by drawing than description; but surely there are many others equally deserving, and indeed demanding, illustration. We are glad to add that there is not only a full table of contents, but an excellent alphabetical index, which we regard as a point of the greatest importance in a book of this kind.

VIII.—A PRACTICAL TREATISE ON MATERIA MEDICA AND THERAPEUTICS.
By ROBERTS BARTHOLOW, M.A., M.D. New York, 1876. Pp. 537.

If the progress of therapeutics is to be gauged by the amount of its recent literature, we may well regard it as hopeful in the highest degree. We have, in truth, been deluged with books of all sizes and of very various degrees of merit treating of the *Materia Medica*. The larger volumes by their mere bulk repel the student, while many of the

smaller are evidently constructed for the sole purpose of facilitating preparation for examinations. One of these latter now lies before us which ingeniously contrives within the limits of forty pages to "place those portions of the subject that most severely try the memory in a more convenient form for acquisition than is possible in systematic treatises."

It must be obvious to every one who is acquainted with the teaching of medicine that the time has now come when an entire change must be made in the mode adopted of giving instruction in materia medica. It will not suffice in the future for the teacher to give systematic lectures embracing all that is known of the history of drugs in their commercial, botanical, and chemical aspects, and of their application or misapplication to the treatment of disease. And still less to do this, as has been the custom of many schools in an early part of the curriculum, before a student knows anything of disease or of the conditions to which it is due. Indeed, the General Medical Council has already given expression to the opinion that a division of the subject should be made into pharmacy and therapeutics. To the first of these the student, fresh from the allied subjects of botany and chemistry, will devote himself in a laboratory course of practical instruction in compounding medicines, in making himself familiar with their appearance, sensible and chemical properties, and with the purity tests set forth in the pharmacopœia. At a later period of study, when he has had some hospital experience, he will be able with advantage to enter on the consideration of the physiological and therapeutical effects of medicines, having an opportunity of verifying by personal observation the results of the experience of others. Recent investigations clearly show what a wide field is now opening up for therapeutics, and we have some reason to be sanguine that with the advance of physiological research, coupled with careful clinical observation, much empirical practice will either be abandoned, or, at all events, will be explicable on established principles.

These few remarks have in part been suggested by a perusal of Dr Bartholow's treatise, which, while its title is "*Materia Medica and Therapeutics*," still abandons very much the stereotyped plan of most writers on the materia medica. In treating of an individual medicine, he confines himself very much to the mere mention of it, giving few or none of the details which are to be found in nearly all text books. Take for example the *Cinchona* bark. Pereira describes at length its genuine characters—habitat, species, history,

collection and preparation, following up with full particulars of the varieties of true and false barks. Dr Bartholow limits himself to naming the officinal barks, their preparations, alkaloids, and their salts. In short, his book, like that of Dr Wood, is mainly devoted to therapeutics, while our English text-books devote a large part of their space to matter partly culled from the pharmacopœia, and partly from the records of botany and chemistry.

Dr Bartholow has adopted a new classification of medicinal agents, which, however, we are precluded from criticising, because he admits it is impossible to form one free from defects, and claims only simplicity as being in its favour. Of the mode in which he has dealt with the physiological and therapeutical effects of remedies, we can speak in terms of high praise, there being abundant evidence of great care and research, and a good feature being the references to authorities appended to each article. At the same time, in some instances he appears to us to fall into the not uncommon error of expressing himself with too great confidence. Thus in a very good resumé of the uses of water as a therapeutic agent, he says, "The most conspicuous triumph of the water treatment of the pyrexial state is seen in the management of hyper pyrexia, a condition of things in which a sudden and rapid rise of temperature takes place, the range being in extreme cases from 105° to 112° F. It is now perfectly well known that any temperature above 108° F. is almost necessarily a fatal sign. This condition of hyper pyrexia occurs sometimes in acute rheumatism, delirium tremens, fevers, &c., and has heretofore not been amenable to treatment. A fatal result in these cases may be averted by cold baths, the temperature of the bath being rapidly reduced from 96° to about 60° F. by the addition of ice. It is sometimes necessary in these cases to prolong the stay in the bath to two or three hours, but it must not be forgotten that no absolute rule can be made, the state of the patient's pulse, respiration, and temperature being the guide not only to the temperature of the bath, but the duration of the stay in it" (p. 51). Now, we do not demur to the statement that hyper pyrexia may be, and in a very remarkable manner is sometimes removed by the use of the cold bath, but it is within our knowledge that the practice is not free from danger. The greatest caution should be exercised in making such statements, and we confess to a doubt whether the time has yet arrived when a confident judgment can be formed or expressed as to the real value or safety of this treatment in such cases as Dr Bartholow speaks

of. Again, in speaking of hydrastis, Dr Bartholow ranks it as next in efficacy in intermittents to quinia, and he adds "The author has seen no injection so frequently successful in gonorrhœa as hydrastics." We shall be truly happy if it prove to be so, but we remember many years ago a remedy—monesia—which was confidently asserted by men of authority and position to be a specific for gonorrhœa far surpassing in efficacy cubeba and copaiba, but which has long since been abandoned and forgotten.

Dr Bartholow gives very complete descriptions of the remedies which have recently come into general use, such as jaborandi, chloral, croton-chloral, &c., and also describes others but little known in this country. Among these is stillingia, the root of *stillingia sylvatica*, employed in America in the forms of fluid extract and tincture. It produces an abundant flow of saliva, increases the intestinal secretions, notably of the liver, producing bilious stools, and also acts upon the bronchial mucous membrane and kidneys.

This remedy, according to our author, has long had a reputation in the Southern States of America as an alterative, and is used with advantage in habitual constipation, jaundice and hepatic ascites. It is also a popular remedy for scrofula.

The sanguinaria, or blood-root, is highly commended in nasal catarrh and acute bronchitis. *Xanthoxylum*, or the prickly ash, in paralysis of the tongue, chronic pharyngitis, jaundice, rheumatism, and constitutional syphilis.

It is unnecessary to refer at length to Dr Bartholow's account of the remedies with which we are all familiar. But we turned with interest to read his notice of the ammonium chloride, an agent which is daily, and deservedly, acquiring a higher reputation than it long possessed in this country. In the third volume of this *Journal* published in 1855, Dr Alexander Lindsay strongly urged the value and importance of the drug in chronic bronchitis, enlargement of the lymphatic glands, chronic skin diseases and chronic rheumatism; and a few years ago, Surgeon-Major Stewart, 21st Fusiliers, a Glasgow graduate, published a paper on its employment in the treatment of hepatic disease in India, bearing testimony to its power in simple enlargement of the liver. As is well known, the ammonium chloride has been a favourite remedy in Germany for many years in these latter affections, and in gastric and intestinal catarrh. But Dr Anstie has shown that it is a powerful agent also in nervous headache and megrim, as well as in some forms of neuralgia. Another disease in which it acts often rapidly and effectively is the chronic bronchitis of advanced life, accompanied by

copious expectoration; indeed we know of no other agent which so frequently affords relief in these cases. Dr Bartholow gives due prominence to these uses of this drug.

But in addition to his description of the uses and effects of medicines, Dr Bartholow does not overlook the subject of dietetics, but devotes considerable space to the consideration of aliments viewed as therapeutic agents, giving the composition and properties of the principal forms of animal and vegetable food, and special plans of diet according to the end aimed at, describing the physiological effects of insufficient food. He likewise notices those modes of treatment so frequently adopted in some parts of the Continent, and known respectively under the names of the grape cure, the whey cure, the koumiss cure, and the buttermilk cure.

We have already indicated that the powers of water as a curative agent are explained, and we are of opinion that the author is right in incorporating in a treatise on therapeutics the varied modes of employing water which are now valued not only by hydropathists, but even by physicians who are fully alive to the defects as well as the merits of the hydropathic system as a whole.

So, also, we find incorporated with an account of alkaline remedies, notes of the chief alkaline springs, not only of Europe, which are well known, but also of North America and Chalybeate, Saline and sulphurous mineral waters receive due notice.

From these few remarks, then, it will be seen that Dr Bartholow condenses within the severest limits his description of the materia medica, but takes a catholic view of therapeutics, and in our opinion acts wisely in so doing. We have no hesitation in recommending his book to our readers as one both of good conception and execution, and the same care which has evidently been bestowed upon the work itself is also shown in the very well executed indices both of the remedies employed and the diseases for which they are administered.

Exchange Journals.

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By DR JOSEPH COATS, *Lecturer on Pathology in Glasgow University.*

VIRCHOW'S ARCHIV.

VOL. LXVII., PART I.—*Continued.*

CONTENTS.—VII. On the reaction of hyaline cartilage in inflammation, &c., by Dr A. Genzmer, Halle. VIII. On the mode in which the susceptibility to small-pox and other infective diseases is nullified, by Dr Schönflot, Dorpat. IX. Experimental investigation on the physiology of the secretion of milk, by Dr D. A. Roehrig, Kreuznach. X. Smaller communications—1, *Lepra anæsthetica* in Japan, by Dr A. Wernich, addendum by the Editor; 2, Answer to Dr Jacob's article on "The treatment of diabetes mellitus by glycerine," by Dr D. Kulz.

VII. **Inflammation in Cartilage** (*Genzmer*). — The changes in cartilage produced by inflammation, as described here, show a certain resemblance to those reported as occurring in the cornea in the preceding part of the Archiv. (See last number of this Journal, p. 559.) After description of the histology of cartilage, the author gives his experiments, which essentially agree in their results with those of Ewetzky. This latter author found that after traumatic irritation or by chemical substances such as chloride of zinc or nitrate of silver the cartilage cells in the first instance only undergo retrograde changes, while the matrix may become fibrillated. The cells most immediately affected atrophy, while those around present vacuoles in their substance. The cells of this vacuole zone may also atrophy, or after a time may return to normal. After two or three weeks there develops around, and in place of the vacuole zone, a zone of proliferation, characterised by enlargement and proliferation of the cells. At the same time there is an active proliferation in the perichondrium, the cells produced there passing forward to fill the gap formed by the atrophy of the cells. The atrophic part is then filled by the cells of the perichondrium and the zone of proliferation, and by-and-bye these form the cicatrix, which through time is converted into hyaline cartilage. In the author's own experiments, which were made on the cartilaginous ribs of rabbits, he observed no active changes in the cartilage cells till the

process of filling up of the gap had been begun by the perichondrium. But at this time there was an active proliferation. He puts the question whether this late activity is inflammatory, and he inclines to answer it in the affirmative, though Ewetzky gives a negative reply.

IX. Experiments on the Secretion of Milk (*Roehrig*).—It has been hitherto very difficult to obtain trustworthy results concerning the secretion of milk, chiefly because milk may remain in the sinuses at the base of the nipple and falsify the calculation. The author has devised an ingenious catheter by which he empties these sinuses. He made his experiments on goats, and in the first place tested the influence of the nerves on the secretion of milk. There are three nerves supplied to the mamma, two of which are branches of the nervus medius, and the third is the nervus inferior. Division of the ramus papillaris (nervi medii) produced no change in the flow of milk, but only a relaxation of the nipple. Electric irritation of the peripheral end caused erection of the nipple, while irritation of the central end caused an increase of the flow by reflex action. This nerve, therefore, contains both motor and sensory fibres, the former being concerned with the action of the muscular tissue of the nipple, and the latter by reflex action affecting the secretion of milk. This latter action is of consequence in relation to the effect of sucking. The irritation of the sensory twigs of this nerve in sucking will induce increased secretion. Secondly, division of the ramus glandularis (nervi medii), or of the whole nervus medius, produces a reduction of the secretion of milk while irritation of the cut peripheral end increases the flow. It may be questioned whether this is a proper nerve of secretion, exercising a specific action on the gland cells, like that which Ludwig has shown to be exercised by one of the branches going to the salivary glands, or whether it is simply a motor nerve acting on the muscular fibres of the ducts, and so hastening the flow. The author believes the latter to be the case, and thinks that the mamma has no proper secretory nerve. Thirdly, division of the nervus inferior causes very marked increase in the flow of milk, up to twentyfold in some cases, and electric irritation of the cut peripheral end brings the flow to a standstill. This is a purely vaso-motor nerve, whose division, by causing relaxation of the muscular coat of the arteries, causes an increased supply of blood and increased secretion.

In the next place, the author has experimented with certain poisons, or medicinal agents, and the general conclusion come to is, that agents which increase the blood-pressure in the general systemic circulation increase the flow of milk. Thus, strychnia increases the flow, and does so after the proper nerves of the mamma have been cut. So do digitalin and caffenin, which also increase the blood-pressure. Experiment showed that Jaborandi increases the blood-pressure, and it increases the flow. On the other hand, chloral diminishes the pressure and decreases the flow of milk. So does bromide of potassium, while atropin is doubtful. Further, suspension of respiration increases the blood-pressure, and increases the flow of milk, while apnœa diminishes these.

X. 1. Leprosy in Japan (*Wernich*).—Liveing, in his work on leprosy, says it is doubtful whether it occurs in Japan. The author, who practices in Japan, has found it exceedingly common. He denies that it is contagious, and the common people, in this respect, agree with scientific observers. But it is distinctly hereditary. Virchow adds a note, pointing out that in 1861 there appeared a report, which was translated and published in Vol. XXXII. of this Archiv, in which a convention of Japanese physicians describe this disease, and state that it is common in that country.

VOL. LXVII. PART II. JUNE, 1876.

CONTENTS.—XI. On disturbances of the circulation in the liver, by Prof. Cohnheim and Dr Litten, Breslau. XII. On the effect of irritation of the skin on the temperature of the body, by Dr Louis Jacobson, Berlin. XIII. On tumours with hyaline degeneration, and an alveolar structure produced thereby, by Dr C. Friedländer, Strassburg (Plate IV.). XIV. On the influence of certain agents on the secretion of the urine and its constituents in diabetes mellitus, by Dr J. Jacobs, Lochem. XV. Spontaneous separation and birth of a polypoid myoma of the uterus, by Dr F. Marchand, Berlin (Plate V., Fig. 1.). XVI. The anatomy of the cicatrices of pregnancy, by Dr O. Küstner, Halle (Plate V., Fig. 2). XVII. Mycosis of the brain, by Dr H. Schüle (Plate V., figs. 3, 4). XVIII. Contributions from the laboratory of pathological anatomy at Warsaw, by Prof. W. Brodowski (Plates

VI., VII.) 1. An unusual peculiarity of secondary new-formations. 2. An enormous myo-sarcoma of the stomach, with secondary myo-sarcomas in the liver. 3. Multiple cysts of the ovary, with ciliated epithelium. XIX. On inflammatory changes in internal organs consequent on subcutaneous cheesy deposits produced experimentally, with reference to the subject of tubercle, by Dr M. Wolff. Berlin. XX. Smaller communications. 1. Tuberculosis vaginæ, by Dr C. Weigert, Breslau. XXI. Extracts and reviews. 1. Clinical studies on chronic Bright's disease, by Dr E. Bull.

XI. The Circulation in the Liver (*Cohnheim and Litten*).

—This paper, like all those by Cohnheim, is exceedingly readable and convincing. It sets out with the well-known observation that in cirrhosis the proper liver tissue gets atrophic, and this is no doubt due to pressure on the blood-vessels by the new-formed fibrous tissue. But the question arises here whether it is the portal vein or the hepatic artery, the occlusion of whose branches causes the retrograde changes in the acini of the liver. This leads to a general discussion of the circulation in the liver, and the views enunciated are based on experiments made on living animals. Use is again made here of the method of natural injection; a colouring material (aniline blue) being introduced into the circulation, and sent into the various tissues by the force of the heart. These injections show that the branches of the portal vein are entirely devoid of anastomoses, are exactly in the position of end arteries, so that when one of these branches is ligatured the blood is at a stand-still in the ramifications of the vessel. On the other hand the hepatic artery has very numerous anastomoses, so that it is exceedingly difficult to ligature a branch and its anastomoses so as to cut off the vessel from the circulation. These injections show further that the portal vein supplies all the capillaries of the proper acini of the liver, while the hepatic artery only gives capillary vessels to the connective tissue, gall ducts, portal and hepatic veins (*vasa vasorum*), so that it is properly a nutritive vessel. The capillaries of the hepatic artery gather up into the interlobular veins for the most part, but it is not decided whether some of them do not pass directly to the proper capillary network of the acini. The interlobular veins being branches of the portal, the blood from the capillaries of the hepatic artery will pass through the portal capillaries after having traversed the

proper capillaries of the hepatic artery. Again, after ligature of the portal vein and the introduction of the colouring material, some of the capillaries in the centre of the lobules were coloured, but this was from a backward flow from the hepatic *vein* to the central vein of the lobules, and not from capillaries of the hepatic *artery*, which some have erroneously supposed to exist in the central parts of the acini. These relations of the circulation explain the important fact that when the portal vein is occluded the nutrition of the liver is not interfered with, and even a certain amount of bile is secreted. For the hepatic artery nourishes the liver, and the blood from its capillaries passing into the interlobular veins will pass thence to the proper hepatic capillaries, and so provide for a slow secretion by the hepatic cells. In connection with this it is to be noted that glycosuria has been observed with closure of the portal vein. Very different, however, is the effect of closure of the hepatic artery. If this is complete the liver tissue becomes necrotic, because the liver is so far deprived of its nutritive supply. But the hepatic artery and its branches have such free anastomoses that closure will almost never occur. . . .

To return now to the case of cirrhosis, the hepatic artery is not obstructed; it has even been found by Frerichs elongated, widened, and twisted. But in certain districts the interlobular veins will be occluded, and by this means the acini being deprived both of portal and arterial blood, they will undergo retrograde changes, while the connective tissue stroma of the liver is abnormally active.

XII. Effect of Irritation of the Skin on the Temperature (*Jacobson*).—It has been asserted by Naumann that irritation of the skin causes reduction of the temperature of the body. The present author has used the most diverse methods of irritating the skin, and finds that no reduction of temperature resulted, and he accounts for the erroneous results by the thermo-electric apparatus used by Naumann being defective.

XIV. Treatment of Diabetes (*Jacobs*).—This paper only establishes negative results. He employed a variety of therapeutic agents on a diabetic patient, namely, inhalation of oxygen, and oxygen with iron, administration of infusion of juniper berries, of tannic acid, and of ozonized oil of turpentine. But none of these agents produced any effect on the amount of the urine and its constituents.

XV. Spontaneous Expulsion of a Uterine Myoma (*Marchand*).—The title of this paper indicates the nature of the case recorded.

XVII. Mycosis of the Brain (*Schüle*).—This was a case of erysipelas in which there were cerebral symptoms. After death, softening of the brain in certain places was found, and in these parts the vessels contained fine vegetable organisms, which are figured in the appended plate. This is of consequence in relation to the observations of Recklinghausen as to the existence of similar organisms in the skin in erysipelas.

XVIII. Two Peculiar Tumours (*Brodowski*).—The first of these cases leads to the discussion of some general points in the pathology of tumours. The case was primarily one of sarcoma of the eye, and there were secondary tumours in a number of internal organs. But these tumours did not in every case correspond in structure with the primary growth. They seemed to vary in their structure according to the organ in which they were situated, so that in the liver and kidney they had the structure of cancer, in the heart and lymphatic glands that of sarcoma. It is as if the infective material from the primary tumour merely exercised an influence on the organs to which it passed, the resulting growth depending on the nature of the organ. . . . The second case is one of an immense tumour, which originated in the wall of the stomach, and was composed partly of smooth muscle and partly of sarcomatous cells. There were secondary tumours in the liver of the same structure.

XIX. The Tuberculosis Question (*Wolff*).—This paper contains a review of the various views held on this subject, and also a number of experiments by the author himself. There is no doubt that there is some connection between cheesy deposits and tuberculosis. Buhl found in 300 cases of tuberculosis only 10 per cent. in which some cheesy deposit was absent, and so he considered tuberculosis an infective disease, due to the absorption of this caseous material. But Klebs has shown that every cheesy deposit does not give rise to tuberculosis, and he believes that the disease is due to some specific *materies morbi*, which may or may not develop in cheesy material. The present author points out, both on the basis of his own ex-

periments and those of others, that the absorption of cheesy material may produce two different sets of phenomena in internal organs. In the one set (and his experiments illustrate this) a subcutaneous cheesy abscess in the guinea-pig (induced by injecting fluids containing fungi, &c.) leads to changes chiefly in the lungs and liver. But these changes are not tubercular. In the liver there was a pure cirrhosis, and in the lungs an interlobular catarrh. The cirrhosis had all the clinical characters of this disease up to ascites, but there were no tubercles on the serous coats. The author believes tubercles to be distinct minute tumours of a highly malignant character, presenting a tendency to local dissemination and generalisation. He also believes that for the production of a crop of these growths a special material is needed, and in this respect he agrees with Klebs. He dissents from the view, however, that this material is some form of bacterium or low organism. He could discover no such structure in any tubercles in the human subject, and he hopes, with Waldenburg, that these two controverted subjects, that of bacteria and that of tuberculosis, will not get mixed up.

STRICKER'S MEDIZINISCHE JAHRBUCHER.

PART III. 1876.

CONTENTS.—I. Leuchæmic tumours of the skin and intestine, with some remarks on the leuchæmic process itself, by Prof. Biesiadecki. II. On embolic ulcers of the intestine, by Dr S. Parenski. III. Contribution to the etiology of the mode of origin of the incarceration of the gut in hernial sacs, by Dr L. Feigel. IV. On intra-articular injuries of the knee, by Prof. L. Dittel (Plates XIV. and XV.). V. The descriptive and topographical anatomy of the lingual veins, by Dr E. Zuckerkandl (Plate XVI., figs. 1 and 2). VI. The anatomy of the orbital arteries, by the same (Plate XVI. fig 3). VII. The anatomy of the tarsal bones, by the same (Plate XVII.). VIII. On the occurrence of new-formed elements in inflamed tendons, by A. Spina, Vienna.

I. Leuchæmic Tumours (*Biesiadecki*).—It is usual to look upon leuchæmia as a disease primarily of the spleen, the lymphatic glands, or the medulla of bone. It is well known that of the various organs of the body one or several of these are the first to be affected in that disease. But in addition to

these organs, others may be affected, and something like tumours may form in the liver, kidneys, respiratory and digestive tracts, the serous membranes, such as the pleura and peritoneum, the internal lymphatic glands, the thymus, the retina, and the suprarenal capsules. There is a case described by the author in which tumours appeared in the skin, and he also describes a case in which the solitary follicles and Peyer's patches of the intestine were enlarged so as to form tumours simulating cancerous growths. The present author does not look upon the lesions in the spleen, lymphatic glands, or medulla of bone as the primary conditions, but ranks them along with the affections of these other organs. He has observed the blood to have already the characters of leuchæmia, before the lymphatic glands have begun to enlarge. He points out that the organs most commonly involved in leuchæmia are just those in which we find pigment stored up after it has been injected into the blood of a living animal. If any granular pigment, such as vermilion, be injected into the blood-vessels of an animal, it is taken up by the white blood corpuscles, and these cells, which become loaded with pigment, accumulate in the spleen, liver, &c. Leuchæmia is, in the author's view, a disease primarily of the blood itself, and in it the blood corpuscles are not only increased in number, but enlarged, the enlargement being due to the existence in them of some foreign substance. This foreign substance acts like the granular pigment in the above-mentioned experiments, and induces the cells to accumulate in certain organs. They accumulate, in the first place, in the organs which appear to be primarily affected, but any structure may become infiltrated with them. It is pointed out that in such organs as the spleen, liver, and kidney, there is an actual atrophy of the proper tissue. In conclusion, the author remarks that besides the occasional occurrence of tumours in the skin in leuchæmia, there are some other changes more commonly met with in that disease, which, however, have no special characters. These are petechiæ, pustulous and farunculous eruptions, superficial abscesses &c.

II. Embolic Ulcers of the Intestine (*Parenski*).—

We have here a collection of cases which seem conclusively to show that ulcers of the intestine are occasionally due to embolism, and this taken in connection with Cohnheim's observation of the effect of embolism of the superior mesenteric artery, is of great interest. The first case is one in which there was a deep cicatrix and ulcer of the jejunum, with adhesion to the ileum, and finally stricture of the

jejunum from the contraction of the cicatrix. There was another lesion present in the form of an apoplectic cyst in the brain, which was probably embolic, and the residua of pericarditis and endocarditis were present. Looking back on the history of the case, it appeared that the patient had an acute illness, said to be typhoid fever, but which was probably acute endocarditis and pericarditis. Either at this time, or at another, the patient had endocarditis, and the probability is, that the inflamed valvular structures furnished emboli to the arteries of the brain and jejunum. In the latter the hæmorrhagic infarction would result in sloughing, and leave an ulcer, whose cicatrization caused the obstruction of the bowel. The possibilities of this ulcer being of a different nature are discussed, but are all dismissed. The second case is more recent and more obvious, a case of atheroma of the aorta, with recent infarctions of the kidney, and an ulcer of the ileum, due to circumscribed necrosis of the gut. In the third case there was a fusiform aneurism of the aorta, with an infarction in the cerebellum and an ulcer in the intestine. In the fourth there was atheroma of the aorta, an apoplectic cyst in the corpus striatum, several recent infarctions of the intestine, and infarction of the spleen. In the last case there was atheroma of the aorta and arteries of the brain, and emboli were found in the arteries of the cœcum, accompanied with infarction of the mucous membrane and submucosa. There was also infarction of the kidney. As to the symptoms of embolism of the superior mesenteric artery, there is first an intense pain in the abdomen, referred to the insertion of the mesentery or the umbilicus, and severe attacks of colic, with bloody stools. If these arise in the course of an acute endocarditis the inference will not be very difficult to make.

III. Incarceration of the Gut in Hernia (*Feigel*).—

The case recorded here, in which after reduction of an inguinal hernia the symptoms of strangulation remained, shows that in addition to the more usual ways of strangulation there may be another. The sac may have a diverticulum, or more than one, and this diverticulum may communicate with the sac secondarily, or with another diverticulum, and the gut may be strangulated at this opening.

IV. Intra-articular Injuries of the Knee (*Dittel*).—

The results of these observations are chiefly these. Violent movements of the knee-joint in certain directions which go beyond the functional limits, may tear away the crucial liga-

ments from their insertion, but do not rupture them in the middle. The lateral ligaments may either be torn in their course or separated from their insertions. Where any of these ligaments is torn from its insertion it very often carries with it a scale of bone. The rupture of these ligaments allows of abnormal mobility, and in the paper the nature of this is discussed in each case, and illustrations given.

PART IV.

CONTENTS.—I. On the present state of knowledge as to the vegetable parasites of the human skin, an address by Prof. Kaposi, Vienna. II. On the tapetum of the eye in certain mammals, and analogous structures in the human choroid, by Dr H. Sattler (Plate XVIII.). III. Experimental and clinical investigations on cervical paraplegia, by Prof. M. Rosenthal, Vienna. IV. Investigations on the difference of tension between the left ventricle and the aorta, by Dr H. Gradle. V. Contribution on pemphigus, by Prof. Neumann, Vienna (Plate XIX.). VI. Further investigations on communicated inflammations, by Dr Burdon-Sanderson, London. VII. The volumetric determination of the blood-pressure in man, by Dr v. Basch (Plates XX.-XXII.). VIII. Correction, by Prof Brodowski.

I. Parasitic Diseases of the Skin (*Kaposi*).—Of late there has been a great deal of labour expended in the endeavour to establish the mutual relations of fungi among themselves and with other organisms. The present author reviews these labours and endeavours to estimate their value in relation to the parasitic diseases of the skin. He believes that the fungi observed in these skin-diseases are necessary constituents of the processes, and their presence may be used as an important diagnostic means. In respect to the views of Hallier, who, on the bases of experiment, believes that torulæ and bacteria are merely forms of well-known fungi, the author places no reliance on the observations, doubt having been thrown upon them by able botanists.

V. A peculiar form of Pemphigus (*Neumann*).—This is a case in which the bullæ had very much the usual appearance. But when they burst there was not the usual excavated ulcer secreting an unhealthy pus, but instead of that a growth formed under observation. This growth was examined after death, and found to consist of much enlarged papillæ of the skin. Such an occurrence has not been recorded before.

REICHERT AND DU BOIS-REYMOND'S ARCHIV.

1875. PARTS IV., V., AND VI.

CONTENTS.—I. On double-monsters, by Dr L. Dittmer, Berlin (concluded). II. The nerves of tendons, by Dr C. Sachs (Pl. XIII.). III. The theory of vision, by Dr E. Dreher (Pl. XII.). IV. Investigations on the brain, by Dr E. Hitzig. V. The vesicle of Savi in the torpedo, by Prof. F. Boll (Pl. XI.). VI. Investigations on the effects of dividing the olfactory nerve in frogs, by Dr G. Colasanti. VII. On the influence of cold on the power of development of the hen's egg, by the same. VIII. Studies on the brains of insects, by Dr Rabl-Rückhard (Pl. XIV.). IX. On the movements of respiration, by Dr P. Guttman (Pl. XV.). X. On the propagation of the contraction and the negative oscillation in the muscle of mammals, by J. Bernstein and J. Steiner. XI. Anomalies of the skeleton of the thorax, by A. Pansch (Pl. XVI., figs. 1-3). XII. Variations in the musculus extensor hallucis longus, by Dr Wenzel Gruber (Pl. XVII. A.). XIII. An accidental bursa mucosa of the musculus laryngo-pharyngeus at the cornu majus of the thyroid cartilage, by the same (Pl. XVII. B.). XIV. A musculus teres minimus scapulæ, by the same (Pl. XVII. C.). XV. A musculus popliteus biceps, by the same (Pl. XVII., figs. 4-6). XVI. A rare muscle of the hyoid bone and larynx, by the same. XVII. The negative oscillation of the muscular current during contraction, by E. Du Bois-Reymond. XVIII. On the passage of stuffs through imperfectly-jointed water conduits, by Dr Kulischer. XIX. On endosmosis of common salt, &c., by the same. XX. The tumours of the ovary, with a historical introduction on the ovaries and tubes, by Prof. C. Henning. XXI. Contributions to the zoology of the so-called anthropomorphic apes, by R. Hartmann (Pl. XVIII. and XIX. A.). XXII. Reduplication of the nipples (second paper), by Dr M. Bartels (Pl. XIX. B.).

II. **The Nerves of Tendons** (*Sachs*).—This author examined the tendon of the sterno-radial muscle of the frog, and also the tendons in the tail of the mouse and kitten, as well as other tendons with less elaboration. He finds in the situations mentioned first, and in some other parts, true medullated nerve fibres which are supplied to the tendon; and in some parts this supply is an independent one, not merely an extension from the corresponding muscle. Several forms of terminal apparatus are described in which these

nerves end. It is remarked that the tendons in which the supply of nerves is richest are the long and thin ones; and this suggests the probable function of the nerves. They are, of course, sensory nerves; and they, with their end-apparatus, may form a very sensitive arrangement for determining the tension of the tendons during muscular contraction. They will thus be a part of the arrangements concerned with the so-called muscular sense.

IV. The Functions of the Brain (*Hitzig*).—We are afraid that Professor Hitzig is rather touchy and polemical, and thinks it his duty to answer every critic of his well-known investigations on the functions of the brain. It is, however, interesting even to read these rather hot replies of his, as they bring out points which might be omitted, and refresh the memory with others. In this paper he deals with three adverse critics; and of these he seems to count Hermann as most worthy of his steel. This author objected to Hitzig's assumption, from his experiments, that the surface of the brain contains centres whose irritation causes muscular contraction. He pointed out that after cauterisation of the surface, or removal of it, electric irritation of the underlying white substance still produces movements. But Hitzig never denied this, and he never even asserted that the peripheral layer is capable of being irritated. This layer being very thin, it may be that it is only the medullary substance or the transition layer which is irritated when electricity is applied. But though by electric experiments it is not possible to determine the existence of cortical or peripheral centres, yet by the method of extirpation this view is substantiated. If irritation of a particular part produces movements of the leg, then extirpation of that part produces a greater or less degree of paralysis of the leg. These results cannot be explained by inflammation extending from the injured part to the medullary fibres beneath, for the paralysis follows the extirpation immediately, and there is no time for the development of inflammation. Then, also, the author has extirpated non-motor parts immediately adjoining motor portions, so that if inflammation is apt to extend, it would be almost sure to spread to the medullary fibres of the motor part; but it very seldom did, and there was no motor affection unless the motor parts were specially involved. It was also objected that numerous authors before Hitzig have irritated the brain by electricity, but did not produce any effect; and it is suggested that Hitzig has used very strong

currents, which might be conducted to distant parts. But it is here pointed out that these earlier authors irritated the back parts of the brain, which are easiest of access; and both Hitzig and Ferrier state that irritation of these parts does not produce movements. The currents used by Hitzig are not strong, but, on the contrary, very weak. In contradiction to the statements of Braun, the author reasserts, in the most emphatic way, the sensitiveness of the dura mater. He is very severe on Carville and Duret. They in the first place have made use of his facts, and now they have made the great discovery that these facts are worthless unless confirmed by their experiments, which are—extirpation of parts of the surface. As if these had not been already done repeatedly by the author, Nothnagel, Schiff, and others.

VII. The effect of Cold on the Hen's Egg (*Colasanti*).—The general result of a series of experiments in which the newly-laid impregnated eggs of hens were exposed to various degrees of cold with a view to finding whether such exposure interfered with their power of developing, is as follows:—A temperature of -7 to -8 centigrade ($+17$ to $+19$ Fahrenheit), which has acted for one or two hours, and may have caused complete solidification of the contents of the egg, does not deprive the germ of its life, it is capable of developing even after such treatment. This is in accordance with certain other facts of nature which indicate that the germs of organism possess a distinctly greater power of resistance than the fully-developed organisms themselves.

IX. The Pneumogastric in relation to Respiration (*Guttman*).—It is matter of discussion what are the exact relations of the pneumogastric to respiration, and especially whether this nerve has fibres related to the expiratory as well as the inspiratory phase of respiration. Certain observers—Breuer and Hering—in order to have their experiments as near nature as possible, set to work to irritate the pneumogastric at its pulmonary expansion, and this they did by producing artificially an exaggerated expiration—*i.e.*, they sucked out the air—or an exaggerated inspiration—*i.e.*, they blew up the lungs. They came to the conclusion that over-distension of the lungs produces reflexly expiration, while reduction in bulk of the lung, by sucking out the air, produces inspiration. These effects were absent if the vagus had been previously divided. The explanation of this seemed easy enough. There is a reflex mechanism whose centripetal fibres are in the vagus,

by means of which an exaggerated expiration is compensated by an increased inspiratory effort, and an exaggerated inspiration by an increased expiratory effort. The theory was readily carried to normal respiration, and it was concluded that during inspiration there is an irritation of a certain set of fibres of the vagus which set up a reflex action by which the inspiration is stopped and expiration set going; while, again, during expiration another set of fibres are irritated which have the opposite effect. This theory seems a very enticing one, and the results on which it is based seemed to be confirmed by Lockenberg. The present author, however, was not satisfied that the animals in these experiments were completely narcotised, and that the experiments were accordingly pure. He has repeated them, using chloral instead of morphia. Chloral produces a deep sleep (in rabbits), and though the usual reflex actions are absent, the respiration has its normal characters, but is somewhat slower. He finds that when respiration is stopped at the summit of an inspiration (by obstructing the entrance of air), there is a pause, after which respiration is resumed, not by an expiration, but by an inspiration. The pause followed by inspiration occurred whether the obstruction was made during artificial or natural respiration. The pause did not occur if the pneumogastrics had been previously divided, so that it depends on peripheral irritation of the pulmonary expansions of these nerves. The exact significance of the pause is not very obvious, and the experiments seem to show that the existence of expiratory fibres in the vagus still stands in need of proof. . . . In regard to the other set of experiments, the author agrees as to the facts with the observers mentioned above. When the lung is collapsed by sucking out the air, or by producing artificially a pneumothorax, there is an inspiratory effort. But in view of the above facts, this does not give support to the theory of Breuer and Hering. It is clear that much remains to be done in this department, and that especially the significance of the pause which succeeds the stoppage of respiration at the summit of the inspiratory phase wants explanation.

XXII. Reduplication of the Nipples (*Bartels*).—The author has already published a case of reduplication of the nipples in a man. This is a case of a young woman whose right mamma is furnished with two nipples at a distance of nearly three inches. The mamma is well developed, and the only other abnormal appearance is a slight depression between the two nipples, which may indicate an attempt at division

of the mamma. An engraving is given in illustration, and the paper concludes with a description of the various forms of reduplication of the nipples and mammæ in man.

TRANSACTIONS OF The Medico-Chirurgical Society.

SESSION 1876-77.

FIRST MEETING, 18th September, 1876.—The following were elected office-bearers of the Society for the Session:—President—Dr Eben Watson. Vice-Presidents—Dr Robert Perry and Dr G. H. B. Macleod. Council—Dr Alex. Patterson, Dr Hugh Miller, Dr D. Taylor, Paisley; Mr A. Macfarlan, Dr Thomas Reid, Dr T. M'C. Anderson, Dr T. Graham, Paisley; and Dr William Macgill. Secretaries—Dr Joseph Coats and Dr G. P. Tennent. Treasurer—Dr Hugh Thomson.

Dr Morton read

“SOME REMARKS ON THE WORK OF THE LAST TWO SESSIONS.”

Thereafter a discussion took place on the subject of Medical Fees, and it was remitted to the Council of the Society to consider the question of a revision of the scale at present authorized by the Society.

SECOND MEETING, 6th October, 1876—Dr Watson, President, in the chair. The following gentlemen were elected members:—Mr Thomas F. Gilmour, Mr Andrew Nicol, M.A., and Mr David Cowie, M.B., all of Glasgow.

Dr Watson, the President, thanked the Society for the honour which, at last meeting, they had conferred on him, by placing him in the president's chair, and explained the circumstances of his absence on that occasion. Alluding to the past history of the Society, he said that it had now existed upwards of thirty years, and that in point of numbers, and the influence accruing from numbers, it was, perhaps, the largest Medical Society in Britain outside of London. Its advantages to the members were great and manifold. It had been the focus of medical thought and experience in the West of Scotland during that long period, and had been the source and stimulator of not a few ideas and proposals in regard to the healing art. It had also, during its existence, been an attractive centre of professional fellowship, and this feature was, to them, one of great importance, and they ought to recognise it as one of their chief objects to encourage it. There was, in his opinion, less of *esprit de corps* among medical men in this city than existed in some other places, and this society would continue to foster such a feeling. As regards enthusiasm in professional work, the profession in that part of the country would yield to that of no other place. He approved of the rule limiting the duration of the reading of papers to half an hour, and also to the limitation of the discussion. Like

every other rule, it was liable to exceptions, and when these really presented themselves, they would be ungrudgingly allowed in suitable cases.

Dr Hector C. Cameron read

“CLINICAL OBSERVATIONS ON CASES OF TRACHEOTOMY.”

Dr Gairdner said that his observations would be limited to the medical aspects of tracheotomy, though he had himself operated, and would be prepared to do so again in an emergency. He had seen a great many cases, and the lesson he had learned from his whole experience was to use great caution and prudence—not to be anxious to proceed on one's own responsibility, but to associate with himself a surgeon as early as possible. This was far from being a superfluous precaution. He had seen a great many cases in which lives were perilled, and some in which lives were lost, by their standing too much on a mere personal feeling of etiquette, being anxious, perhaps, not to alarm the friends by proposing a desperate remedy. The maxim which he would impress on his brethren in regard to the medical treatment of these cases was, that the surgeon should not be called in, for the first time, at the last moment, but should be associated with them in the whole aspects of the case, so that the two together might be able to give an opinion to the friends. He had before his mind a case which illustrated the opposite side of the question. At a distance from Glasgow, he telegraphed for *Dr Cameron*, and he was sure that gentleman would not forget the many hours during which they watched during the night at the bedside of the patient, who was the only child of her parents, to determine the question of the proper time for the operation. The operation did save the life for many days. The conjunction of circumstances requiring tracheotomy during pregnancy was very curious. He had seen a case in which the woman was far gone in phthisis. The child was born alive, and the mother survived the circumstances of the birth, and then mother and child died almost at the same instant. The circumstances under which tracheotomy might be performed, with organic disease existing within the chest, were often remarkable. He had seen a case in which it was performed on a patient advanced in phthisis, with hardly any hope that it would lengthen her life. Yet she did live for months afterwards, and only died from the supervention of gangrene of the lung.

Mr John Reid said that he was surprised to learn that abortion or miscarriage had been ascribed to the want of oxygenation of the blood caused by obstruction in the windpipe. He had very often delivered, at the full period, women who had been subject to chronic bronchitis. He did not recollect of any case of premature labour being produced by such a cause. *Dr Cameron's* statistics corroborated the conclusions derived from the experience of others, that the operation had greater chances of success in diphtheria than in genuine croup. He had himself once performed the operation in croup, with immediate relief to the breathing, but the patient died in about an hour and a-half afterwards. He found that the inflammatory action in that case extended down the whole length of the trachea, while the bronchi were filled with a highly organized secretion of the usual pinkish appearance. He took exception to *Dr Cameron's* mode of operating, in regard to making an external incision of some length. In doing so it would be necessary to cut across some vessels. He (*Mr Reid*) performed the operation with a double-edged scalpel, and made an incision about the same size as that effected by bleeding from the arm. He cut into the trachea at once, while there was no bleeding worth speaking of. The operation was, indeed, very easy, and, of itself, could give rise to no anxiety in the operator. Had he been provided with the tube *Dr Cameron*

had shown that evening, his chances of success in the case referred to would have been greater, as the small canula which he used got frequently choked up.

Dr Scanlan said that, as being the practitioner who delivered the woman of triplets in one of Dr Cameron's cases, he might state that the mother in that case was very much worn out with nursing a child ill of laryngitis. In this state she contracted cold. Her servant, seeing the state of matters, left her. He examined her throat the day before the operation, and it was perfectly clean in every respect. The necessity for the operation soon, however, became obvious. It was skilfully performed, and the augury was hopeful. He left her feeling comfortable. But labour set in, and one of the children was born alive within twenty-four hours. The other two were then delivered dead. The immediate cause of death appeared to be shock.

Dr John Coats inquired whether it was possible there might be some causative connection between the pregnant condition and the laryngitis? Was the urine albuminous?

Mr Robert Grieve pointed out that the operation had seldom been successful in the cure of very young children. He wished to know whether there was any difficulty in inserting the tube in children at that age?

Dr Hugh Thomson said that the *raison d'être* of the operation was to give time for treatment. The operation itself was not necessarily attended with much risk. With regard to the facility with which it could be performed, he could scarcely concur with what had fallen from Mr Reid. He (*Dr Thomson*) had experienced considerable difficulty in opening the trachea after it was fairly exposed. He could not very well see how with such a very small incision as that made by Mr Reid it would be possible to get in the tube.

Dr Foulis said that some facts were known to him which illustrated the contagiousness of diphtheria. In a recent epidemic of the disease at Helensburgh, three children in a family took diphtheria. Two recovered, and one died. The mother nursed this latter case. Three weeks afterwards the mother was seized with diphtheria, and after a short illness died. In her case he performed tracheotomy. On the sixth day of her illness there were two spasms of an alarming character. Two surgeons, called in consultation, advised that the operation should be postponed. The instruments, however, were kept at hand, and it was arranged that if necessary assistance should be obtained and the operation performed later. He waited with her seven hours, during which no further spasms took place; but just as he was leaving the house a third spasm of extreme severity occurred. She fell back on the pillow, respiration ceased, and the colour became dark livid. The heart, however, continued to beat, and under the circumstances he performed the operation. She gradually recovered, regaining consciousness in two hours. She died in twenty-four hours, but did not again suffer from difficulty in breathing. In operating he followed the plan taught in Vienna of using a hook to fix the trachea before opening it. This method prevented the wound of the trachea not being in the same line as the wound in the skin.

Dr Morton said that the hook was in ordinary use in this country for the purpose indicated by Dr Foulis. With regard to the case referred to by Dr Foulis, that gentleman acted very properly in the circumstances. The relief was very marked, and the patient regained consciousness. The question of the contagiousness of diphtheria opened up a very important

question—viz., whether it was ethically right to expose medical students to the risk of contagion in assigning to them the duty of waiting at the bed side, and watching the tube. It was questionable whether they were justified in doing so. He might remark, by the way, that Mr Spence had pointed out that bronchial complication were rather a hopeful sign in these cases. The reason was that in cases in which bronchial complications were present they were less liable to have plastic exudations, which were so dangerous. Another question of importance raised by Dr Cameron's paper was that of the causation of abortion in these cases. There were a great many diseased conditions other than those named by him, which almost necessarily resulted in abortion.

Dr Wm. MacEwen said that, in regard to the communicability of diphtheria by contact, one case was admitted to the Fever Hospital. In ten days two other patients in another ward were seized with diphtheria. On investigation it turned out that a silk handkerchief of the first patient had been used by the other two. No other cases occurred in the hospital. *Dr MacEwen* then gave details of two cases in which he had performed tracheotomy, one on a child in the Fever Hospital, and the other in an adult. In the latter he used the hook for carrying the trachea forward.

Dr Renfrew said that one of *Dr George Buchanan's* early successful cases was in a child two years of age. After the operation there was not a bad symptom. He thought that tracheotomy was quite justifiable even in a case in which recovery was hopeless. The intense suffering to the patient from the laboured breathing, and the distress to the onlookers, were so painful, that even temporary relief was worth gaining. In regard to the unoxygenated state of the blood causing abortion, it was noteworthy that some zymotic diseases, particularly smallpox and typhus fever, often eventuated in miscarriage, and in all probability from a similar cause.

After a few words from *Dr Menzies*,

The President said that this was a subject to which he had paid great attention. With regard to the operation, there was a special instrument called the trachea knife, which had advantages not possessed by the ordinary instruments. With regard to the silence of systematic writers in regard to the thymus gland, he presumed that they took it for granted that most surgeons were aware that the gland was there, and that such an incident as *Dr Cameron* referred to might occur. The results of the operation, however, were not all *colour de rose*, nor was it unattended with danger. No doubt the easy death after the operation was something to consider; but in many ways could the patient be injured. The removal of false membrane sometimes caused injury. The operation might do no good, as the distress in breathing might, and often did, return again. He opened the trachea of the child of a member of that society suffering from diphtheria. In three or four days the breathing became worse, and the child died in a state of asphyxia. If the mass of general practitioners were impressed with the idea that the obstruction to the breathing at the glottis or windpipe was one that could readily be removed by tracheotomy, the operation would be had recourse to more frequently than its successful results at all warranted. The tube he had lately been using was of boxwood, and lighter than the ordinary tube. The shield should be as broad as possible. He was very much pleased on the whole with *Dr Cameron's* paper, which, on the face of it, was obviously an honest clinical statement.

Dr Cameron, after acknowledging the manner in which his paper had been received, said that with regard to the statistics of tracheotomy in these cases, he held that if there were no more than three recoveries to every

twenty deaths, this operation was justified, because, without the operation, these three cases would also have died. Even in those cases which died, if the lives were prolonged, no matter how many hours, and relief were given to the breathing, the operation was justified. If he had a child suffering from diphtheria, he would not hesitate to have the trachea opened, if the symptoms indicated that there was immediate danger of death from obstructed breathing. In regard to the matter of the thymus gland, he thought that some merit was due to Dr Buchanan for prominently bringing before the profession the risk of an accident, which was very embarrassing when it did occur. With respect to Mr Reid's observation in regard to chronic bronchitis in pregnant women, he had to point out that chronic bronchitis did not produce asphyxia. It did not, therefore, give rise to the state of the blood which was liable to produce abortion. That the presence of excess of carbonic acid in the blood would give rise to abortion was certain, as Mr Reid would find in consulting books of obstetrics. In regard to the incision, Giralducé, the well-known French surgeon, in his work on the Surgical Diseases of Children, devoted one or two paragraphs advising, beseeching the surgeon to beware of operating in the way mentioned by Mr Reid. In some cases tracheotomy was an easy, sometimes a very difficult operation; in all cases, an exciting operation, and one liable to give rise to unexpected incidents. In young children, it was usually much less difficult to open the trachea than in those older. For his own part, he did not use a hook. Dr Foulis' case well illustrated one or two points. One was, the great difficulty of knowing when tracheotomy would be required. Lately he had a case which also illustrated this. He was requested to sleep in a house in a critical case. The child had had one or two suffocating paroxysms. He took with him tracheotomy instruments, but during that night the paroxysms were slight. He left in the morning, promising to call at home every hour, to be in readiness. At half-past eleven he found that a messenger had called, and had taken the instruments to the house. He found the child apparently dead. Nevertheless the operation was performed, the child revived, and lived for three days afterwards, dying of asthenia. The mere shifting of position of a piece of false membrane would be enough to bring about sudden asphyxia. In regard to the contagious nature of diphtheria, he would mention a case in point. The son of a well-known Sheriff was taken with what proved to be diphtheria, in Glasgow. His father came to see him. The old gentleman was very distressed at the condition of the son, and in his warm affection he fed him from a spoon, occasionally taking a mouthful himself from the same spoon. He (Dr Cameron) warned him against this practice. The result was that the young man died; the father took ill with the disease, and also died. While he would not go the length of not taking a medical student to a case, he would certainly take care to warn him that the service was not without danger, and direct him how best to avoid contagion.

THIRD MEETING, 3rd November, 1876—Dr Watson, President, in the chair.

Mr C. Wallace, M.B., C.M.; Mr John Alexander, M.B., Partick; Dr David Young, all of Glasgow; and Mr John Highet, M.B., Troon; were elected members of the Society.

Dr Alexander Patterson read a paper on

“A CASE OF GUN-SHOT WOUND.”

Dr Macewen said that Dr Patterson had conducted the investigation in this case in a manner creditable to himself. He had lately seen one or two

cases of gun-shot wounds. One was that of a gentleman fired at in an office in town. There appeared to be one wound only, and that in the hand. He passed a probe down into it, but found nothing. He then asked him to strip, and carefully examined him from the shoulder downwards. After half-an-hour's search, he thought that he felt something hard near the bend of the elbow. The patient felt nothing there at first; but he (Dr Macewen) was so sure that he persuaded the patient to permit him to cut down on it, and the ball was extracted. In another case, the man had some difficulty in getting his gun to go off, and for the purpose of examining it he had slung it round his shoulder, when it exploded. The ball struck him in the mouth, on the left side, taking away the lower incisor and upper canine teeth. On the right side of the palate above there was a rent, and portions of teeth were found in the wound. As there had been no portions of teeth broken from the right side of the mouth, these had evidently been carried from the left side. The mouth must also have been closed at the time, as a round aperture, blackened with powder, was shown when the lips were brought together. The question then occurred, What had become of the ball? The man thought he had spit it out, but he was not sure. Search was made at the locality of the occurrence, when a ball was got covered with blood and saw-dust. The wound was jagged and rent, and when the saw-dust was removed there was found in the interstices some portions of a white substance, which turned out to be dentine. A prominence was found under the left eye-ball, which was afterwards shown to be caused by the stump of the canine tooth, which was found under the right eye protruding at the infra-orbital ridge. This was extracted through the canine fossa.

FOURTH MEETING, 17th November, 1876—Dr Watson, President, in the chair.

Mr George Halket, M.B., and Mr Robert J. Wallace, Glasgow, were admitted members.

HYDROPHOBIA.

Dr Charteris initiated a discussion on hydrophobia, by reading the notes of a case of that disease which he had treated in the Royal Infirmary. Some conversation having ensued in regard to the absence of official reports of two other cases which had occurred in Glasgow,

The President said that one of these cases had been treated in the Royal Infirmary, and though it had not been under his charge, the salient features of it had been so indelibly impressed on his recollection, that he would try to give some account of it. Three months before the man was taken ill he had been bitten by a dog. When admitted into the Royal Infirmary he was suffering from a combination of symptoms very like those described by *Dr Charteris*. They were, however, more aggravated at first than those of the case described. When he (*Dr Watson*) was called to see him he was sufficiently sceptical in regard to hydrophobia to believe that he was not about to see any peculiar disease at all. He expected to see a case—perhaps of tetanus. Instead of that he saw a condition which he had no difficulty in pronouncing as emphatically *not* tetanus. The man was perfectly sensible; and seeing him in a condition in which he was amenable to reason, he told the patient that he was very nervous, and agitating himself in a needless way; that he was quite able to keep himself quieter and calmer if he made a resolute trial; and that if he composed himself his fear of water would pass off. The man replied that he was aware of all that, and he would make an effort. He took a jug of water and endeavoured to swallow a little with a gulping effort. He said to him, "You are not

frightened to look at the water ; is there anything which prevents you from drinking it ? ” “ Yes,” was his answer, “ it appears to me that when I try there is an adhesion of the tongue to the palate, so that the water will not go down.” He admitted further that it was strange, as he could sup it with a spoon. A spoon was brought, and sure enough he supped several spoonfuls with very little difficulty. This was in the early stage. The strange combination of symptoms was so marked and distinct, that he had no hesitation in declaring at that period that the disease was of a distinct character from any he had ever seen. The case now progressed further into a state in which acute mania was the leading symptom. He constantly agitated himself violently, and worked in an indescribable way with his whole frame. He was like a man in a state of extreme fear and agitation. They were glad latterly to get him into the strait jacket. His face got blue, the blood was evidently imperfectly aerated. It was noticeable that there was no tetanic spasm. There was, indeed, a kind of spasm when his forehead was blown on. The muscles then became violently convulsed. The expression of fear was markedly like that of a person plunged suddenly into cold water. He died eight days after his admission into the hospital. Other surgeons who saw the case might supplement his description of it.

Dr Cameron said that, in regard to the case described by *Dr Watson*, the man averred that till the symptoms began he had thought nothing of the bite since its occurrence. On the Sunday he had felt an uncomfortable feeling at the place of the bites, and had taken to rub the part. The itchiness continued, and he scratched one of the scars so much that it began to discharge. On the following night he vomited. (In the Falkirk case the man also vomited at the commencement of the attack.) On Tuesday the dysphagia commenced. Three distinct stages of the disease were then noticeable, in regard chiefly to the mental manifestations. There was in the first few days a stage of melancholia. There supervened next a state of acute mania of a terrible sort. He attempted to get out of the window, to bite, and otherwise was so violent that a strait-jacket was eventually resorted to. At last the mania passed off, and there set in a state of great exhaustion, very like that of a bad case of typhus fever rapidly beginning to sink. The first night there was noticeable an extreme dilatation of the pupils, so much so that had he seen the man at the Eye Infirmary he would have said that he had had atropine on that day. He could sup the water from the spoon without any great effort ; but he always emitted a peculiar short sigh, which is referred to by *Sir Thomas Watson* as very characteristic. This sigh was sometimes given in the middle of conversation, and always when his scalp was fanned or blown upon. It was very like the sigh which one would give if a little cold water were thrown on his face, or like that of a child who had stopped crying violently. The difficulty in swallowing passed off on Thursday or Friday. He tried him then with some milk, which he drank, but he could not perform efficient deglutition for any time. The “ sigh ” was constantly recurring. He gave him the dish at last, not observing that it was empty, when the patient, who had noticed the fact, winked to him in a peculiar way, to notify his being aware that there was nothing more to drink. After reaching the state of exhaustion referred to, he referred to his previous state of mania, and warned those about him to keep out of his way. Of one house-surgeon, to whom he had taken a special dislike, he averred that he had had the strongest temptation to kill him. He now begged the strait-jacket to be taken off, saying, “ You have had your way of treatment ; let me now try mine. You have plenty of rooms here. Put me into one of them, and let two men walk up and down the room with me. Or, send me home to my mother’s

house. I have a brother who is a big fellow; he will watch and take care of me." They afterwards found these statements to be quite correct. At this time his brother's wife came to see him, and was admitted to the ward. He knew her at once. On Sunday his eyes were very greatly congested, and a muco-purulent discharge was constantly running down the side of his nose. At the suggestion of Dr Peter Stewart they examined the under surface of the tongue, and found two little shining pustules. These pustules had occasionally been noticed in these cases. The patient gradually got weaker and weaker. Dr Charteris' case was very similar, except in regard to the violent mania. There were some features in his case which were absent in the other. One of these was excessive salivation. Dr Charteris' patient also began to sink at a much earlier period after the mania than the other.

Dr M-Gill said that he could give the details of the third case—that taken to the Western Infirmary—from the beginning of the symptoms up to the time of his admission to the hospital. The man, a sergeant of police, was walking along Argyle Street, about half-past four o'clock in the morning of the 28th September, when a black retriever dog rushed forward towards him, coming close up to him. Seeing its nearness, he lifted up his hand in a direction away from the dog, which then immediately jumped up on his shoulder, and, to use his own expression, "crunched" his hand. He (*Dr M-Gill*), though somewhat suspicious of the case when he heard the attack described, spoke to him in a manner fitted to dissipate any fear he might have; and, as a matter of fact, he found him quite cheerful, and free from nervousness. He saw him at his own house. Sent him to have the wound dressed at the hospital, and it began to heal kindly. His health was good, and his mind apparently tranquil. What influence the publication of the other two cases may have had eventually on his mind he could not say, but, as far as he knew, it appeared to have none. He saw him every second day till the fourth week, when he began to complain of a pain in the back of the hand, with a tingling sensation, accompanied with itchiness. This pain then went up the arm, and appeared to fix itself at the bend of the elbow. A little papular eruption appeared at the place of the wound, whether arising from his scratching the place he could not say. He described the pain now as "crampy." On the Sunday before his death (which was on Wednesday) he saw him. He had vomited several times, but he (*Dr M-Gill*) did not ask him whether he had any difficulty in swallowing, from a wish not to annoy him. He advised him to go to the Western Infirmary, to which he demurred, unless he was allowed to go out that evening; but he ultimately consented. In all his intercourse with him he could detect no nervous dread of the consequences of the bite. If he had any fear of hydrophobia, he certainly did not express it to him.

Dr Morton said, that on being taken to see the first case, he had little thought of seeing a case of what was known as hydrophobia; and certainly as regards these cases, the term was misapplied, whatever was the nature of the disease. The first patient was in a very peculiar nervous condition; but of fear of water, or difficulty of swallowing it, he had little or none. He (*Dr Morton*) tried him to swallow, and found that he could do so with hardly any difficulty. Some beef-tea was offered to him; his nervous system was in a curiously excited state, and on offering it he drew away his head, but on slipping some into his mouth, he slid it over with a sigh. On putting his hands over his eyes, he got him to drink a cupful of water, and he poured a little over his face, without his emitting any sigh. He quite satisfied himself that there was no other demonstration when the water was thrown

than would have been made by anyone in similar circumstances. He made these remarks because, in observing anything, the public, and, to a less extent, the profession, were much influenced by preconceptions. They generally saw what they wanted to see. Judging from the two cases he saw, he had no hesitation in saying that, at all events, the name "Hydrophobia" was a misnomer. The descriptions of the disease in books were very erroneous. In neither of the cases was there any convulsions worthy of the name. There was nervous tremor in both: there was delirium in both—a sort of nervous delirium, mixed with intelligence. In the first case the mania closely resembled that of typhus fever. A person taken to see the case without being told anything of it, would have concluded the disease to be typhus fever. In the second case the patient also swallowed readily a little beef-tea. He did not deny that possibly in these cases, and certainly in some cases, there was something peculiar—something which could not be referred to in its commencement to nervousness. This could not be doubted, when they saw idiots and young children attacked, who were incapable of being influenced in this way. But the name, "Hydrophobia," as given to the disease which he saw, was a misnomer. He regretted very much that they had not before them that evening the most minute details of the three cases from the lips of those who had charge of them. In such cases surgeons were very apt to go to the cases under the influence of a preconceived idea; and naturally enough they saw what they went to see.

Dr Macleod said that he had certainly approached these cases with a very strong prepossession; but it was one almost entirely against the supposition that the disease was at all specific in its character. Besides these cases, he had formerly seen two others in the country. He went to these cases, believing that he might see something which could be classified in some category of disease, such as tetanus, hysteria, &c. After seeing the first case, he came away in great doubt. The second case staggered him still more, and the third case left him no reason to hesitate in saying that he had seen a disease with very peculiar symptoms, differing from those of any other that he had seen. In the third case he had taken great interest. The look of fear or scare on the man's countenance, the peculiar cry in trying to swallow, the peculiar condition of the excitomotor system, the hyperæsthesia of the skin, could not be confounded with the symptoms of any other disease. The horrified cry with which, on being pressed to swallow a little water, he threw away the dish after making a determined effort to carry it to his lips, was something he would never forget. He (*Dr Macleod*) tried to inspire him with courage, reasoned with him kindly, but in vain. The subject of hydrophobia was one in which from his having once written on it, and from having heard so much of it in his visits to the East, he had felt an intense interest. He had been told in Eastern cities, that possibly the exciting cause of rabies was the want of proper food in dogs running wild. On applying to Sir Jos. Fayre, he referred him to one case published in his clinical surgery, and which was the only case he had ever seen. In Central Africa he had been told that the disease was unknown. Even in the West Indies the disease hardly existed. Familiar with these facts, he had been convinced that it was impossible to be too sceptical and cautious in the diagnosis of cases of reputed hydrophobia. But as he had already admitted, these three cases had altered his views on the subject. He was quite convinced now that he had seen a disease he never saw before. The very peculiar spasmodic action of the pharynx in respiration, resulting in a sort of sob, the hyperæsthesia of the surface of the body, these and the other symptoms were very peculiar. Show

him a case of real hysteria, in which a man in middle life was affected, and which proceeding through different stages, terminated in death, and he would admit the possibility of this disease being of that nature. The pustules referred to as being seen in one of the cases, were known to occur in a very small proportion of cases. Post-mortem examination in these cases told nothing, as there were no appearances which were not explicable by the particular form of death. As to therapeutics, if a case came under his charge he would apply ice to the spine, keep the patient under chloroform, and feed him by the rectum. He thought that the use of the strait-jacket was a mistake. If there was danger of death from asphyxia, he would perform tracheotomy. He might as a last resource try the effects of the continuous current.

Professor M^cCall, V.S., said that he had not during all his twenty years veterinary practice seen a case of rabies in the dog. Dogs were often brought to him as being mad. He simply shut them up by themselves for some time, and without any treatment they were soon well. He had eight days ago inoculated two dogs with the saliva from one of the hydrophobic patients. That evening he had examined the dogs. One of the cicatrices appeared to be healed up. The other still looked a little angry. The animals were in the best of spirits, though they had been a little apt to bite after the experiment was performed.

Dr Adams said the question of the period of incubation following the reception of the virus, was one of great interest. Numerous experiments had been made with the view of testing the manner of the propagation of the poison. The blood of the infected animal had been used, the flesh had been eaten. That the saliva propagated the disease there could be little or no doubt. He thought it a matter of regret that the cicatrix had not been cut out in one of the cases, for the purpose of being implanted or inoculated in another animal. The period of latency might thus be experimentally determined, if the poison took effect. Some believed that the virus lay for a while like a leaden pellet in the tissues; that for a time it was localized in the wound, till by the operation of some peculiar circumstance or condition it became developed, giving rise to the disease. There were some known facts in regard to vaccination, which would appear to give countenance to this idea. Two or three instances were on record of cases in which the vaccine virus failing to take effect at the usual time after the inoculation, yet did take effect at some subsequent period, and then showing its characteristic marks. A son of his had been re-vaccinated three times some three or four years ago. On the last occasion, which was some six weeks after the second re-vaccination, he concluded that he was insusceptible of the disease. However, eighteen months afterwards there appeared on the arm true vaccine pustules, which ran the ordinary course. Now, if vaccine lymph could for such a period produce its characteristic effects, it would be of great interest to find how long the virus of hydrophobia lay latent, and under what circumstances its power was called into active exercise.

Dr George Buchanan said that, call them what they might, it was certain that they had in these three cases certain peculiar symptoms, and that they all terminated in death. It was very singular that in all the cases the attacks were developed from fear, or, at all events, that they were preceded by fear of an attack from hearing or reading of other cases. They had all seen cases of dog-bites, and yet how very few were seized with hydrophobia. He thought that the supervention of the physical symptoms after an onset of fear or alarm pointed a lesson in regard to the treatment. Physical treatment was of no avail. The history of the cases rather in-

licated the modes of treatment adopted for the mentally deranged. To send these cases to an ordinary general hospital was probably a mistake.

Mr John Reid said that he could not coincide with the opinion that fear was the generating cause of the disease. In all cases there have been coincident with or before any attack of fear a peculiar itchy state of the wound. He thought that it had been established that the virus was got from the salivary secretion of the dog. The ordinary mode of cauterizing the bitten part was a great mistake. The only effect was to fix the poison in the wound. The wound soon closed, but subsequently an itching took place at the place, showing that the virus was still imprisoned. He believed that the application of a simple poultice was a much more scientific practice. This would have the effect of drawing off the venom from the wound, while the cautery, in any form, simply fixed it in the wound.

Dr Dougall said that the following were the chief conclusions come to in regard to this matter by the Congress of Veterinary Surgeons, held at Vienna in 1865:—(1.) That rabies might arise in the dog *de novo*. (2.) That it was at times epidemic. (3.) That very warm weather seemed to have no influence in causing it, but seemed to have an influence in preventing it. (4.) That hydrophobia was a specific, independent disease, originating a contagium peculiar to itself, which, transmitted to animals or human beings by a bite or inoculation, produced the same disease. (5.) A person attacked was sure to die. (6.) The bite of a healthy dog never caused the disease; only the bite of a rabid dog caused hydrophobia in the human subject. (7.) Only a small percentage of persons bitten by rabid dogs took hydrophobia. (8.) The period of incubation had been definitely ascertained in the case of one dog to be thirteen weeks.

Dr Finlayson (of Demerara) said that in the colony from which he came hydrophobia was not known till four years ago. In 1872 some cases occurred in Barbadoes, upon which the Governor ordered a general destruction of the dogs. Many of the animals were clandestinely given to ship captains to be sold in other places. In that way many of these dogs were brought to Demerara, and not finding purchasers, were necessarily turned loose, and ran in a wild state through the streets. Immediately thereafter some cases of hydrophobia occurred in George Town. On the dogs being destroyed, no new cases were heard of for six months, when some cases occurred in another part of the colony. Fear could have had no power in generating these cases, as those attacked were ignorant Shicks, unacquainted with the nature of the malady. One ludicrous case of the disease occurred in a monkey.

Dr Joseph Coats said that they had heard some graphic descriptions of the disease, and he was impressed with the fact, that if it was of a special character these symptoms must have an anatomical basis. He had searched the various tissues to endeavour to discover some structural change, but as yet he had not succeeded. He found bloody serum on the surface of the brain and in the ventricles, but this showed nothing special as to the disease. He had not yet carefully examined the nervous system, so that he could not say whether he would succeed in finding any minute changes in it. By the way, some analogy had been pointed out between these cases and typhus fever; but nothing had been said in regard to the temperature the febrile condition of the cases. He would like information on that point.

Dr Scott Orr said that as to the first case he was in the beginning sceptical. At first he regarded it as a case of mania, with hydrophobic symptoms. The second case raised a grave doubt whether this view was correct. But what he had risen to say was, that he thought it a mistake

to send these cases to a general hospital. There was too much excitement and too many people constantly going about and seeing the cases in such an institution. Theirs was a case for home, not hospital, treatment.

The President said that no one who was practically acquainted with disease, on seeing these cases, would hesitate to say that they were anything else than a special disease. He would not quibble about the name, which might or might not be wrong. With regard to fear, it was possible that might be the exciting cause. He was not in a position to say whether it was or not; but it was not the real cause of the disease. They were all aware that medical students were liable to have fictitious diseases, arising from fear of the corresponding real diseases. Some were more liable to the influence than others. But it had never been asserted that students were more liable than others to attacks of hydrophobia. Fear could not produce a special disease. The class of persons seized were not the class liable to have hysteria. Two of these cases were men in middle life, and the other a young man in his prime. There was a remarkable feature of the disease. The blood of a rabid dog had been injected into the blood of another dog without result. It was the secretion of the mouth that contained the poison. But the saliva of the man attacked would not produce the disease. He would venture to predict that the experiment of Professor M'Call would remain resultless. It was stated in books that the disease never originated spontaneously. If this were the case, how did the first rabid animal become affected? Spontaneously it must have originated in the dog some time or other. A flock of sheep had been bitten by a rabid dog. The rabid sheep did not communicate the disease. The sheep was an animal in which the disease could originate spontaneously. It appeared, therefore, that the poison exhausted itself in transmission from one animal to another. In the recent cases some of the attendants were bitten, and there was no fear to apprehend any effects.

Dr Macleod said that by exhaustive experiments at Alford in France it had been shown that it was not the saliva, but the bronchial mucus which contained the poison.

Dr Charteris said that in regard to the name "hydrophobia," it was one that had been applied for a long time, and it would not be easy to change it. *Dr Reid*, in poulticing a dog-bite instead of cauterizing it, was kept in countenance by Celsus, who advised sucking the wound, and then cauterizing it. Sucking the wound was also practised in certain parts of Belgium, where the fee of sucking a wound by persons who practised it was ten francs a-head. *Dr Macleod's* treatment by ice had been tried in his cases, but the utter restlessness of the patient made them unable to continue it. In his case it was almost impossible to take the temperature. *Dr Dunlop's* case was markedly febrile—from 101° to 103°. In regard to therapeutics, he agreed with Trousseau, that in such a disease everything should be tried. The transfusion of blood had been suggested, but as far as he knew had not yet been tried.

FIFTH MEETING, 1st December, 1876—*Dr Watson*, President, in the chair.

Mr W. J. Brock, and *W. J. Adam*, M.B., C.M., were admitted members.

Dr M'Call Anderson read

"CASES ILLUSTRATIVE OF THE CURABILITY OF TUBERCULAR PERITONITIS
AND ACUTE PHTHISIS."

Dr H. Thomson mentioned a case of acute phthisis in a young person of

14 or 15 years of age, belonging to a family markedly phthysical, who had symptoms very similar to those described by Dr Anderson in one of his cases. Her recovery appeared to be hopeless, and yet eventually it was complete for the time. But eight or nine years thereafter she was carried off by tubercular disease.

Dr Perry said that his experience corroborated that of Dr Anderson in these cases. He had now had a considerable number of cases of acute phthisis which had recovered. No doubt these patients were left in a somewhat delicate condition, and were liable to succumb to phthisis in future years. These cases nearly all occurred in early life. Of peritoneal phthisis and pulmonary phthisis he had no hesitation in saying that he had seen not a few cases cured. He had never used atropine injections, but treated them mainly with cod liver oil and quinine, sometimes combining digitalis with these.

Dr Gairdner said that whatever view they took of the nomenclature of the diseased conditions in these cases, the subject was one of great interest and importance. As clinical records, the cases had been detailed with closeness and accuracy of observation, which entitled them to great confidence. He would go one step further, and say that everything which tended to open up a vista of hope in connection with tubercular disease should be regarded with kindly eyes. Every member of the Society had been placed in circumstances in which he had watched with trembling solicitude the issue of cases which, for perhaps days, weeks, or even months together, balanced between recovery and death; doubting the while what name to apply, and waiting for the issue to determine whether to call it a case of tubercular disease or not. The natural tendency of their minds, biassed as they were by the doctrinal statements of books, was to assign to the fatal cases the name of tubercular disease, and to relegate to another category those cases which lived. Now, if they could obtain perfectly clear and unequivocal evidence that cases of the acute kind referred to in the paper, yet which ultimately recovered, were tubercular, it would be a great point gained. With regard to tubercular peritonitis, he (*Dr Gairdner*) was at one with Dr Anderson. Cases of the kind mentioned in the paper were familiar to him. Within the last three or four years he had seen a good many cases in which undubitable peritoneal symptoms did exist, with effusion in the cavity; sometimes with disease of the lungs also, which would have justified in all respects the belief that they were dependent on a tubercular constitution, and in which the issue had been favourable. These cases may relapse again, and they may die of tuberculosis after all. If that was to be called "tubercular peritonitis," and not chronic peritonitis in a tuberculous subject, then such cases did present apparent recoveries. One such case he had last winter, in which there was not only evidence of fluid in the peritoneum, but observation of the fluid evidenced both by touch and by friction sounds, and in which there was a perfectly distinct thickening in the omentum. It was, therefore, even a stronger case than Dr Anderson had produced; and that case recovered at all events for the time. His observation of these cases in the hospital led him to believe that they would sometimes relapse, and take on other forms of tubercular disease, and die. It would be interesting to know what were the precise morbid appearances which would be found if one of these persons died *in medio* of some other disease. Would they find absolute tubercles, or that lymphoid effusion to which the name of tubercular lymph had been given? As regarded acute phthisis, the question was more difficult, as it involved more doubtful diagnostic points. They were all familiar with the view of

Niemeyer, to the effect that there was a considerable class of cases which were sometimes ranked as phthisical, which were cases of inflammation of the lung. Sometimes in these cases secondary tubercle was generated from the infection of the system by the products of inflammation. Personally he did not participate in Niemeyer's opinions in that matter, and he believed that sooner or later the profession would go back to something like Laennec's views on tubercle. In such cases as those which Dr Anderson had recorded, the great difficulty was to find proper evidence of the exact condition of matters in the lung. Such cases were by no means uncommon. Within the last few weeks he had seen two or three of them, in which the pathological view to be taken was just balancing on the result. If they recovered, what should they be called? If they died they would of course be called cases of tubercular disease. In his view, the clinical stand-point of the class of cases treated of in the paper was by no means so clear as was indicated by the title. That title took for granted more than was proved. They must wait for the slow completion of proof before being in a position to speak with certainty on the matter.

Dr Bell said that for some two years past he had treated tuberculous cases in the following manner: First, he used inhalation of solution of arsenious acid twice a day. Then he had given muriate of lime, and with most beneficial result. Under this treatment the improvement was very marked, the signs of softening of the tubercle in the lung gradually disappearing. In *Tabes Mesenterica* especially he could calculate with confidence on immediate benefit. The fetid stools and the emaciation were at once arrested, and the bowels put in a healthy action. In this way he had seen scores of children who appeared to be dying from *Tabes Mesenterica* rally and get well.

Dr Cowan said that the therapeutical aspects of Dr Anderson's paper were interesting. It was satisfactory to find in it a confirmation of the view that atropia had the effect of restraining and repressing the cutaneous discharge in acute phthisis. Then the action of digitalis in reducing the frequency of the pulse was remarkable. The effect of iodine in reducing the temperature was also very noteworthy. The phrase "curability of acute phthisis" was perhaps liable to exception, as Dr Anderson was not exactly in a position to say that the disease had been cured. It was to be feared that at no distant period the signs of the affection would again manifest themselves. All of them had seen cases of phthisis in which at first there was high fever and other alarming symptoms, which led them to fear that the patient was going to sink, and they had seen some of the cases recover. But the disease returned very generally. He (*Dr Cowan*) had known a case of phthisis, which lasted over forty years, occurring through that long period at intervals. Speaking after *Dr Bell*, he would make a remark which he would have made had he spoken before him, viz., that while scepticism as to the action of drugs was an evil in one whose business it was to treat disease, credulity was a greater evil. A pamphlet had that day reached him, in which the most perfect mode of curing consumption by "hydrated oil" was set forth. Of specifics for cancer and other diseases they had all heard. Now, his frank opinion was that in regard to pulmonary phthisis they could manage it so as to prolong life; but they could not cure it. No doubt there had been spontaneous cures, the evidence of which had been verified by post-mortem examination. But what they could do was simply to manage the disease by science, climatic and other treatment.

Dr Joseph Coats said that he had last summer seen a remarkable case of

remission of the symptoms of acute phthisis. In that case there was clear evidence of extensive condensation and cavity in the lung. The age of the patient was 17; the febrile condition was very acute, the temperature about 105°. There was also dyspnoea, and well marked and extensive condensation of the upper half of the lung, and the commencement of softening. These symptoms had begun five weeks before hæmoptysis set in. The softening then increased at the apex, and a cavity formed. He anticipated a fatal issue to the case. It was at the time that salicine had been introduced, and he tried salicylate of soda to reduce the temperature. The result was successful. The temperature could be kept down and reduced several degrees with little difficulty. The other symptoms began to abate. First the general condition improved, and then the sweating got less. The signs of softening began to disappear, the cavity began to shrink, and the appetite improved. When he left the hospital he was progressing very favourably towards recovery, though, of course, the lung would not recover, though a part of it might possibly become obsolete. In regard to the general question of the pathology of the subject, he was inclined to Niemeyer's opinion. He thought the fact of the curability of a case, and that the disease might stop, was evidence of its non-tubercular nature. Real tuberculous disease was necessarily progressive, in whatever organ, the lung, the kidney, or the peritoneum, it presented itself. In phthisis they had an inflammatory condition which might or might not become tubercle.

Mr *M'Carron* mentioned a case of phthisis, in which a man of 20 had very severe hæmoptysis. On examination he found disease of the left lung, chiefly at the apex and towards the base. Change of air, cod liver oil, &c., were tried without effect. He then tried the hypophosphites, and with a favourable result. He was soon able to bear the cod liver oil, gained flesh, and all the symptoms began to abate. At present he had no fever, could walk with ease, and had no visible signs of the loss of lung tissue.

Dr *Richmond, Paisley*, pointed out that there was no necessary antagonism between the theoretical views of Laennec and Niemeyer. In regard to treatment, he considered the inhalation of arsenious acid, which had been tried by Dr Bell, as very likely to do good. In cancerous disease arsenic had almost the character of a specific. Iodide of arsenic was very well tolerated by the stomach, and it could be taken for years without bad effect. Its alterative action was most kindly in its results. But they were still a great way from a specific in the phthisical diathesis, though in the case of consumptive children the use of a prophylactic might be employed with advantage. In the hypophosphites, he would have considerable faith. There was also no difficulty in getting the patients to take them.

The *President* said that he very much concurred in what had fallen from Dr Cowan. Persons were frequently brought to him as laryngeal cases, in which there was incipient signs of disease at the upper part of the lung, co-existing with laryngeal ulcers of the tubercular kind. In some of these cases the disease, after a time, did appear to be cured; but years afterwards it was sure to recur, and the result was tubercular lung disease, from which they died. This took place in all cases he had traced. As to the therapeutical aspect of the question, Dr Anderson's line of treatment was open on the theoretical side to the obvious objection that it was directed entirely against symptoms—against the fever, the sweatings, &c.; but that the root of the disease was left untouched. If, indeed, Niemeyer's

opinion, that tubercle was to be considered an exudation was correct, then a remedy applied to that could not be said to be treating the disease. Although, however, the method was open to criticism, no doubt atropine was worthy of farther trial, even in regard to what Dr Cowan had called the "managing" of the disease.

Dr Anderson, in reply, said that they were all agreed that ordinary cases of chronic phthisis sometimes get well. But he had carefully defined his cases as being acute phthisis, and in respect to the term "curability" of the disease, he submitted that the possibility of relapse did not affect the success of the present treatment. The term "cure" would require to be very much extended to fall in with such a view. He thought that Dr Perry's cases could not be of the same character as those he had detailed, as no one would have ever given quinine and cod liver oil to patients in the condition to which his had been reduced. Dr Perry's statement, that curable cases occurred invariably in early life, also contradicted his experience, which led him to believe that no subjects were more likely to succumb to phthisis than young persons, and that the older the patient the more likely was the disease to take on a chronic form. He was glad that his views on tubercular peritonitis had been corroborated by a gentleman of such experience as Dr Gairdner. Dr Coats had stated that in his case there was consolidation of the upper half of one lung. Now, in his (Dr Anderson's) experience such a case, in which there existed a defined and localized lesion, was exactly one of the kind in which a favourable result sometimes occurred. The worst cases of phthisis were those in which there were obscure physical signs, not localized, but disseminated over the entire lung. No doubt Dr Watson's remark, that the treatment of symptoms was not the treatment of the disease, was, to some extent, true. But there was no specific for phthisis. And in this disease one of the greatest dangers lay in the elevated temperature. The body was gradually wasted, and the strength weakened by the fever, and any treatment which had a tendency to lower the temperature gave to the patient an immense advantage in his battle for life.

Dr Perry read a

"CASE OF MEDULLARY CANCER OF THE LIVER, SIMULATING HYDROTHORAX."

See page 47 of this number of the Journal.

No discussion followed the paper.

Glasgow Pathological and Clinical Society.

SESSION, 1875-76.

SEVENTH MEETING, March 28, 1876.—(Continued.)

Dr Fraser, Paisley, presented two patients, brother and sister, with a peculiar form of NERVOUS DISEASE, and gave the following report:—The male patient is aged 30 years. He is described as having been healthy when a child, and spoke and walked as well as other children until his third

year. When about that age it was occasionally noticed that he would stagger or become unsteady in his walk for a few seconds. When first observed this would pass away, and perhaps not recur for a day or two. The unsteadiness in his gait became very decided by about his sixth or seventh year. He was sent to school about this age, but was soon taken out of it because of his inability to write—the result of unsteadiness or tremor of the hand. His unsteadiness of gait has been getting regularly worse. When I was first consulted by him, about eight years ago, he delivered newspapers from house to house, going about with the gait of a drunken man. He could then walk considerable distances, and fell but seldom, though walking very unsteadily and festinating very much. He now finds it difficult to walk very far, it being much more fatiguing, and he falls very often. Five years ago he weathered a sharp attack of typhus fever, without being apparently much the worse of it. His appetite and digestion are good. Though somewhat emaciated, his muscular system is well developed; there is no paralysis; he can sustain considerable muscular effort with his legs and arms. There is internal strabismus of right eye. There is slight unsteadiness of the eyes, but no true nystagmus. The articulation is hesitating and slow. The urinary functions are normally performed. The cutaneous sensibility is not in the least affected, but respond normally to the ordinary tests. His intelligence, though not of a high order, is good; what might be expected from one in his circumstances. His friends assert that his memory is particularly good. With the exception of a slight movement of the head, there is no tremor of any part of his body when he is seated. He can hold out his arm without tremor. On being given a pencil, or any object of that description, he is able to hold it out at the full stretch of his arm without any unsteadiness. When asked, however, to make voluntary movements, there is obvious inco-ordination, and he picks up an object in the manner, though not so exaggerated, of one affected with chorea. If I ask him to place his finger on the point of his nose with his eyes open, he does it nearly as well as any healthy person. With his eyes shut he has difficulty in doing it at once, his finger moving about unsteadily before resting on the spot. He can stand perfectly well; both with his eyes shut and open. You observe that he walks more like one affected with vertigo than anything else, and that his gait presents a strong contrast to that of locomotor ataxy. His own statement is that his difficulty in walking is due to his “head being light.” The sister, aged 20 years, is not so bad; in particular, she does not festinate so much in her walk. She is well developed, menstruates regularly, and is in good general health. She reads ordinarily well, but has not been able to write because of the difficulty in making the necessary movements. She is ignorant, but free from any mental defect. Her history as to the origin and progress of the disease is but a repetition of her brother's, as I have already described it. I have carefully questioned the mother as to the origin of this affection, and there is no record whatever of any illness to which the symptoms

can be attributed. There is no history of ill health, of feverish attacks, fits or convulsions; there is no mention even of teething troubles. The father and mother are ordinarily healthy working people. The father, while not deficient in intelligence, is not very bright. He has been temperate for a few years back, but I learn that about the time these children were born he was a *drunkard*. The mother is rather intelligent, and is a very industrious woman. She had one sister weak-minded from birth. The paternal and maternal grand-parents were healthy. The patients belong to a family of nine, of whom five are living and four dead. One died a few days after birth. A second died from the sequelæ of measles, æt. 15 months; had convulsions a few days before death. A third, also æt. 15 months, died of convulsions after three days' illness. The fourth, æt. 32 years, died of phthisis. The living members of the family are apparently healthy. One of them, a married woman, had repeated attacks of convulsions when about eight years old. She has a child, aged three years, suffering from chronic meningitis. Dr Thos. Reid kindly examined the eyes of my two patients with the ophthalmoscope. His report is: "The optic discs pale and contracted, and somewhat irregular in their outlines. The paleness of the discs, especially in their upper aspect, . . . was partly obscured by a slight and superficial congestion. The retinal veins were opaque and rather congested. The arteries rather contracted, The fundi pale and dingy coloured, indicating, I think, interstitial changes in the structure of the choroid—probably escape of pigment granules from the cells diffused through the substance of the choroid and giving it the opaque and dull aspect it had. This change in the choroid had probably some obscure connection with the meninges, especially the pia mater, with which it is in direct connection in the embryonic state, from which period the changes indicated above had their origin." While not in the least inclined to dogmatise as to the nature of this affection, my impression is, that there is disease chiefly of the cerebellum, and probably of the nature of sclerosis—a condition which may have taken its rise in childhood as the result of a form of chronic meningitis. Or we may have in the cerebral or cerebro-spinal centres, a degenerative process, having its origin in the embryonic state, and possibly, as to its cause, having some connection with the drunkenness of the father at the time of procreation. As against this latter view, we have the fact that it was not until the third year that the symptoms were first observed.

Dr Reid read the following report of the microscopic appearances of the kidney and eye in a case of RETINITIS ALBUMINURICA, which was brought before the Society on December 14th, 1875:—

Kidney.—Microscopic sections of the cortical substance of the kidney, previously hardened in chromic acid, exhibited the usual well-marked thickening of the capsule, with the inward prolongations of connective tissue with corpuscles. This connective tissue occupied chiefly the inner half of the cortex, that, namely, near to the base of the pyramids, the

remaining half, divided into isolated patches by the prolongations from the capsule, retaining almost its normal appearance. In this stroma traces of the tubules were seen, denuded of their epithelium, and reduced to mere tubular threads, filled with nuclei. Transverse sections of the tubes in the more healthy portion showed some of them denuded of their epithelium, some crammed with broken epithelium, and others containing tube casts *in situ*. The basement membrane of the tubuli was everywhere thickened, and the epithelium showed granular degeneration in all its stages. The malpighian tufts were nearly normal, but in many parts were enclosed in a thickened capsule. The arterial walls were hypertrophied and transparent, the veins normal.

The Eyeball.—On making a horizontal section of the eyeball, previously hardened in chromic acid, the contents were normal, with the exception of the optic nerve entrance, which appeared as a flat conical projection elevated about two lines above the level of the retina. The retina adhered closely to the choroid, and was with difficulty separated from it. In a horizontal view of the retina, under the microscope with low power, numerous dark reticulations, with clear interspaces were observed. Under a high power these seen to be partly composed of condensed cellular tissue, infiltrated with brownish masses. In the centre of the white interspaces a transparent nucleated cell was frequently observed, surrounded by a hyaline substance. The nerve fibres were in an advanced stage of fatty degeneration, having lost their contour lines, and containing numerous nuclei in their fibrous sheaths. In vertical sections near the fundus of the eye, the different layers of the retina could still be distinguished. The inner surface, with the nerve fibre layer, were condensed into a single layer, leaving a clear space between them and the molecular layer, filled with hyaline substance, in which the ganglionic cells were occasionally visible. The other layers, with the exception of the layer of rods and cones, were infiltrated with minute transparent corpuscular elements, resembling the cells of the outer granular layer. The position of the layers of rods and cones was occupied by a whitish plastic exudation, which involved equally the epithelial layer of the choroid and the layer of rods and cones, all traces of the original structure of both being lost. At short intervals masses of brownish granular cells, arranged in vertical columns, were seen lying nearly in the position of the radial fibres, which they seemed partly to replace. They probably were the cause of the brownish reticulations seen in the horizontal view. The retina viewed in section was, contrary to what we sometimes find, in such case, somewhat narrower than normal. The clear spaces in the region of the ganglionic cells was in some cases considerably distended in two or three neighbouring cavities, and projected beyond the level of the inner surface of the retina. In the substance of the retina, at numerous points, clear spaces were observed, occupied by hyaline substance, the spaces having been formed by the displacement of the fibrous tissue of the retina. The choroid was slightly hypertrophied, without any marked deviation in its structure, with the exception of the dangers in the epithelial layer already referred to, and a diminution in the number of the stellate pigment cells at various points. The projecting part of the optic nerve entrance consisted of loose connective tissue. In the substance of the optic nerve a few amyloid bodies, resembling those seen in other affections of the optic nerve, were noticed.

Remarks.—The prominence of the optic nerve entrance seen in section of the eyeball was not observed during life; on the contrary, it seemed to be atrophied and depressed in its centre. On account of the

alterations produced in the retina by hardening in chromic acid, it is impossible to connect the highly-reflecting white bodies seen with the ophthalmoscope with the appearances presented either by the horizontal or vertical view of the retina as seen under the microscope, for with the exception of the clear spaces referred to, the tissue of the retina presented much the same appearance in sections, both where the white bodies abounded and where they were absent. No doubt the white bodies seen in this case were arranged in groups of minute rounded or angular spots, which may account for the absence of any definite signs of their existence on *post-mortem* examination.

One remarkable circumstance in this case is the amount of vision retained, with the total destruction of the sensitive layer of the retina, patient being able to see No. 19 Jaeger till within a week of his death.

Mr H. E. Clark showed microscopic specimens of a SKIN FUNGUS, and cuticular folds from patients suffering from the disease, which had been forwarded by Dr William Macgregor, Chief Medical Officer, Fiji. (See p. 343 of last volume of the *Journal*.) A committee was appointed to investigate the nature of the fungus, and report to the Society at a future meeting.

Dr Joseph Coats showed a PIECE OF MUTTON BONE which had been impacted in the left bronchus for seventeen months, and had caused death by gangrene of the lung. The case was taken at first for one of acute phthisis, cavities having rapidly formed in every region of the left lung. But latterly the symptoms of gangrene—especially excessive and fetid sputum—became more pronounced, while the right lung remained almost free. The piece of bone was part of a vertebra of a sheep, which measured in one direction three-quarters, and in another half-an-inch. It was found in the main bronchus of the left lung, where it had caused ulceration of the mucous membrane, so that it lay in an irregular cavity, with an ulcerated internal wall. This lung was firmly adherent in every part, and its tissue leathery and non-crepitant. It was honey-combed with cavities, which were not large in size, but existed in every part. No large gangrenous portion was found. The right lung was fully inflated, and extended beyond the mediastinum in correspondence to the contraction of the left. It contained two small cavities, having very much the appearance of metastatic abscesses. In answer to the question, whether this piece of bone was within reach of removal by tracheotomy, Dr Coats said that he was led to believe that the serious symptoms were developed at a time when their relation to the existence of the foreign body might be doubtful, and that there were at least no very early symptoms of such urgency as to suggest a serious operation.

Dr Coats also showed, for Dr Macleod, a preparation of a PERITYPHLITIC ABSCESS, and gave the following history:—The patient, a woman aged 37, was strong and healthy till within a month of her death. About that time she began to suffer pain in the inguinal region, and this gave rise to a swelling exactly in position of ascending colon. The pain was not

violent, and there was no fever. The swelling extended up to beneath ribs and down into pelvis, with dulness on percussion over this region. There was distinct tympanitis in the central parts of abdomen, while transverse and descending colon seemed empty. On examination per vaginam a tumour in Douglas's space, and os tilted forward and firmly fixed. Nothing found in rectum. Pressure over tumour caused pain, but nowhere else. Complete constipation for several days. No sickness or vomiting. Pulse 60°-70°, and of good strength. Able to take liquid food. By use of enemata, fæces evacuated in considerable quantity, and a large quantity of fluid could be pumped into bowel. Under careful dieting and opium did not lose ground, and was doing tolerably well up to forty-eight hours before death, when feculent vomiting came on, and produced rapid exhaustion. During life there was passed, by bowels, a quantity of matter exactly like that found in the cyst. On *post-mortem* examination, the bowels firmly adherent; the adhesions old. The bowels also pushed aside by a firm cyst, which was adherent to anterior wall of abdomen and to neighbouring bowels. This cyst elongated and confined to the side of abdomen. It contained pus and soft lymph in masses, and behind it the ascending colon was found. The colon communicated with it, &c., &c.

Dr David Foulis showed a preparation of a STRICTURE OF THE ASCENDING COLON, six inches above ileo-cæcal valve. The stricture did not admit point of finger, and was quite full of a compact mass of nut shells, egg shells, and seeds of oranges. The ileum and first part of colon was strewn with similar debris. On opening up the stricture it was found to be quite localised, and to be lined by a soft velvety-thickened mucous membrane. Near it (on the side of the caput cæcum coli) were several circular shallow ulcers. The diagnosis formed was that the stricture was the result of the cicatrization of a simple ulcer of the colon. No trace of tubercular complication. The history during life was that of cramps in the lower part of the abdomen of twelve months' duration; the pain coming on in spasms of sharp shooting character. Occasional swelling of abdomen, spreading upwards and across to the navel. Bowels at first irregular; latterly very persistent diarrhoea; terminating with total occlusion of the bowel.

Dr Foulis also showed a case of INVAGINATION OF THE LOWER PART OF ILEUM into caput cæcum coli in child, æt. 6 months. The following notes of the case were furnished by Dr Hugh Miller, the physician in attendance:—The infant was six months old. The mother's breast disagreeing with the infant, various kinds of food had been tried without very satisfactory results. Ultimately cow's milk with pepsin were found to agree best. During the last month of his life he lived in the country, and was said to be getting on first-rate. Two days before he died he became sick, he vomited much, and his mother describes the symptoms as being "colicky." Next day he suffered less pain, had a loose motion, and again in the evening, but at this one only blood was passed. The napkin which was shown

to me had a stain about the size of a hand. On the morning of its death the child was brought to town, and I saw him at eleven a.m. He was pale, as if in collapse. I ordered brandy. The bowels appeared loaded, but I could detect no special hardness. To relieve this I ordered an enema of turpentine. At two p.m. I saw him; he was warmer and looked much better; there was no evidence of suffering or tenderness. Still found present this general fulness of the abdomen, and as the enema had not relieved the bowels I ordered it to be repeated. This was done, and during the time it was being administered blood sprang from mouth and nostrils; no fœcal matter came away. Child became rapidly worse, and sank apparently from exhaustion at seven p.m.

MEETING, April 8, 1876.

Dr Knox read the REPORT OF COMMITTEE ON OVARIAN CYST.

The committee appointed at last meeting having met in the Museum of the Royal Infirmary and examined the tumour of the broad ligament presented by *Dr Foulis*, and having also compared it with the specimens already in the Museum, beg to report as follows:—

The cysts in *Dr Foulis'* specimen are situated in the broad ligament on the left side of the uterus, and may be divided into three sets—

- (1) The fallopian tube distended with fluid.
- (2) A large oval cyst in the broad ligament immediately below the fallopian tube.
- (3) A collection of small cysts placed in the outer part of the broad ligament, between the fallopian tube and the large cyst, and best seen on the anterior surface of the ligament.

1. The fallopian tube was very much enlarged, measuring nine inches in length, and distended with fluid, especially at its outer end. It curved over the upper surface of the large cyst in the broad ligament, and at its outer end was bent inwards, so that the fimbriæ, or what corresponded to them, were spread out over the end of the large cyst, and were closely adherent all round it. Close to the uterus the fallopian tube was of normal size. On opening the tube along its upper surface, a yellow, muddy, serous fluid escaped. The large cyst was also emptied through this incision, and it was then seen that a large, free communication existed between the outer end of the cyst and the incurved extremity of the fallopian tube. The opening was a cribriform one, being crossed by a number of interlacing bands. The inner end of the fallopian tube was impervious to even a very fine bristle.

2. The large cyst was of the size of an orange, somewhat oval-shaped, and lying fairly between the layers of the broad ligament. It contained yellow muddy serum like the fallopian tube. Its interior was quite smooth. Its anterior and posterior walls were thin, and the peritoneum could be stripped from them with ease. At the inner end of this cyst the ligament of the ovary was easily traceable; it was in two parts, one of which was short and spreading over the end of the large cyst, while the other passed outwards above, and rather in front of the cyst, to the collection of small cysts already mentioned; another small cyst, rather bigger than a pea, was found on the posterior wall of the large cyst, close to its upper part.

3. The collection of small cysts was placed in a narrow space between the upper and outer part of the large cyst and the fallopian tube, and princi-

pally shewed on the anterior aspect of the broad ligament. These were cut into by carefully dissecting between the fallopian tube and large cyst. They were five or six in number and contained serous fluid. They were partially embedded in a small mass of firm tissue, which could be felt as a flattened nodule between the finger and thumb, placed in the interiors of the fallopian tube and the large cyst respectively. This whole mass was concluded by the members of the committee to be the ovary somewhat displaced outwards and forwards by the growth of the large cyst.

The so-called *parovarium* was distinctly seen in its usual situation between the layers of the broad ligament, above and rather to the inner side of the large cyst. It consisted of two or three small short oblique tubes, and one long tube which ran more transversely towards the uterus and was gradually lost. The parovarium was quite separate from all the cysts.

The committee were unanimously of opinion that this specimen was thus a case of a true multiple ovarian cyst, with the fallopian tube stretching over it.

In the Museum of the Royal Infirmary there are ten wet preparations of ovarian cysts, but only two specimens were found (Nos. 66 and 41, Series VIII.) in which the fallopian tube is stretched over the tumour. The first-mentioned of these is a case of a distinct multilocular ovarian cyst with colloid contents. The other is unilocular, and is probably a parovarian cyst, though as to this there may be some doubt.

Dr Alexander Robertson presented the parts removed from a man, fifty-four years of age, who had suffered for eight months from difficulty in swallowing; the food seemed to be caught in two places, one half way down, and the other at the stomach; latterly a bougie could not be passed into the stomach. He presented the aspect of one suffering from malignant disease. A large globular tumour was found growing from the posterior wall of the cardiac orifice; about the middle of the Œsophagus, a large circular ulcer, with several small ulcerated patches, were found, and these had constricted the passage to a considerable extent.

Dr Robertson also showed a very marked case of STRICTURE OF THE ŒSOPHAGUS, near its lower end, scarcely admitting a crow-quill. Above this, a small abscess was found firmly adherent to the pleura of the lower lobe of the left lung and to the aorta; there was some ulceration, and pus had escaped into the left lung. A bougie had been tried during life, but of course it failed to enter; *Dr Robertson* thought this attempt to pass instruments might have something to do with the formation of the abscess, although no injury had been done so far as known at the time. The patient was a woman, thirty-one years of age; the symptoms had lasted six months.

Dr Thomas Reid showed four eyeballs with INTRAOCULAR TUMOURS; and presented also microscopic sections.—*Case 1.* A man, aged 50, shown to the Society last session (*Glasgow Medical Journal*, July, 1875), had had, apparently for about twelve months, a tumour in the ciliary region of the left eye; and, as it began to increase, the eye was enucleated in July 1875. On making a vertical section of the eye, after hardening in chromic acid, the tumour was found to occupy the lower half of the anterior chamber,

involving the corresponding part of the iris and ciliary body, and extending backwards in the choroid as far as the equator of the eyeball; it was covered by the retina, which was separated as far back as the optic nerve entrance, but was otherwise unaffected. The tumour had evidently originated in the ciliary region. It was tolerably firm, and of a dark brownish appearance, consisting mainly of round cells in a fibrous stroma, with a slight admixture of fusiform cells. No recurrence has taken place as yet (twelve months).—*Case 2.* The right eye was removed from a man, aged 45, about eighteen months ago. There was great exophthalmia, and there were staphylomatous protrusions in the anterior segment of the ball, without actual rupture of the coats; the eye measured about an inch and a half in length, and one inch and three-quarters in breadth. On making a section of the hardened eyeball, the cavity was found to be completely filled with a whitish pulpy mass, having in its centre a more solid and pigmented tumour, about the size of a filbert. There was no remnant of the choroid in any part. On microscopic examination of both the hard and soft parts, the tumour had the characters of a round-celled sarcoma. Six months after the operation, the patient returned with a fungous tumour occupying the alveolar process of the superior maxillary bone; and the patient died in five months thereafter, without any return of the disease in the orbital cavity.—*Case 3.* A male child, aged eighteen months, was admitted to the Eye Infirmary, in May 1874, with acute inflammation of the right eye and exophthalmos; the anterior chamber being filled with blood, no ophthalmoscopic examination could be made. The disease had appeared three months previously, and had been treated locally by stimulants and astringents without benefit. Cancer of the eyeball was diagnosed, and enucleation was carried out in the course of a week, under chloroform. On removal of the ball, the orbital cavity was found filled with cancerous matter, the greater part of which was also removed. On examining the eyeball, a tumour was found to have penetrated the sclerotic behind, and to communicate with the cancerous mass in the orbit. A month later, the tumour recurred in the orbit, but no further interference was advised, and the child died in October following. On further examination, after hardening, the cavity of the vitreous body was seen to be filled with a tolerably firm whitish substance, communicating, through a narrow opening, with similar structure enveloping the sclerotic. Under the microscope, the tumour was found to be a round-celled sarcoma with a fibrous stroma.—*Case 4.* A man, aged 65, was admitted, in September 1874, complaining of dimness of vision in the right eye; and, on ophthalmoscopic examination, separation of the retina on its outer aspect, near the equator, was seen; there being no congestion or symptoms of irritation of any kind, the existence of a tumour was not suspected. In August 1875, the patient returned, having suffered for a month with acute pain in the eye, associated with staphylomatous protrusion in the upper and outer aspect of the ball, the pupil was dilated, and there was a glaucomatous appearance; slight exoph-

thamos existed. Tumour of the eyeball was now diagnosed. The patient's health, hitherto tolerably good, had now become slightly affected. Although, on examining the liver, some enlargement, hardness, and slight nodulation were detected, it was determined to enucleate. On removing the eye, the orbit was found to be filled with cancerous matter, the greater part of which was removed. On examining the hardened eyeball, the cavity of the vitreous body was found to be filled completely with a deeply pigmented structure, which, under the microscope, showed the usual characters of melanotic cancer. The patient died six months later, the disease having recurred. No *post mortem* examination was made.—Dr Reid said that, in cases 1 and 3, the disease appeared to be of local origin; while in cases 2 and 4, the eye seemed to be involved in a secondary way, or, at least, this local disease was coincident with a more serious constitutional affection. In case 1, the history and development of the tumour pointed to its being less malignant in its nature, or, at least, of slower growth. This view was so far confirmed by the non-recurrence of the disease, and the microscopic examination showed it to differ less from the normal structure of the choroid than in the other cases.

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Original Articles.

I.—SOME REMARKS ON URÆMIA, WITH CASES OF SCARLATINAL DROPSY TREATED BY BLOODLETTING.

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(*Read before the Medico-Chirurgical Society of Glasgow, 2nd March.*)

AS very few now practise venesection under any circumstances, it is possible that the Society may be interested in notes of a few cases of scarlatinal dropsy in which this measure was used, with, as it appeared to me, a very satisfactory result. Though some authorities still recommend this procedure in some diseases, as for instance Trousseau, who, though not otherwise favourable to it, makes a special exception in the case of scarlatinal dropsy; yet it is so seldom resorted to in actual practice that one feels in venturing on it as if he were performing some unheard-of experiment, only to be justified if crowned with success. Along with my cases, I have hazarded a suggestion as to the cause of uræmic symptoms, differing somewhat from current views on this subject. Of this I will only say that, while it is admitted that none of the theories of uræmia at present entertained can be regarded as universally applicable (*vide* Dr Roberts' Renal Diseases, page 434), it can do no harm to discuss any new view. The theory which I propose to lay

before you is founded on the idea that there is a law of antagonism in the systemic circulation, and that various phenomena, both in health and disease, including uræmic symptoms, are to be explained, so far, at least, by reference to it. To set forth fully the evidence which might be adduced to prove the existence of this law, and the way in which it may be conceived to operate in various conditions, would lead us much too far. I shall only attempt a very brief and imperfect sketch, which may serve to give a general idea of what I mean.

The blood is distributed through the two great areas, the pulmonary and the systemic. The pulmonary is confined to a single organ, whilst the systemic comprises a great variety of tissues and organs. To these various parts of the latter area the blood is distributed very unequally at different times, each part receiving a larger quantity at one time than at another. This is universally recognised. Thus, we constantly read of the blood being determined to this organ, or derived from that organ; by one means it may be drawn outwards and by another driven inwards; while some claim a power over its course which is practically boundless. The hydrotherapeutist, it would appear, can chase it round the entire circuit at his pleasure—can force it to move on here, and even (to use his own phrase) fix a given quantity there, according to the effect desired, so that there seems to be no corner of the body in which it can find refuge from him. If there is really any foundation in fact for these statements, what do they point to? Let us limit our attention to the following simple, undeniable facts:—

1. It is a familiar fact that the different parts of the body do not perform the same amount of work at all times; but, on the contrary, that each part alternately works and rests, and that some parts are working when others are at rest.

2. It has been ascertained by physiologists that during a state of tissue activity in any part its arterioles are dilated, the circulation through them accelerated, and that consequently it is receiving a greater quantity of blood in a given time than when its tissues are in the opposite state.

3. It is frequently found in pathology and morbid anatomy that there are congestions of various parts, often of large organs, which thus contain much more than their average amount of blood. It seems evident that this can only be obtained at the expense of the rest of the system. If so, is it from some particular part only, and by what law is this determined?

If, then, as proved from these three classes of facts, variations in the amount of blood supplied to any part are of constant occurrence, not only in pathological but in physiological conditions, it seems certain that these must depend on some special mechanism and be governed by definite laws. If all parts cannot manifest the highest degree of tissue activity simultaneously, and if the heart cannot supply them all with the maximum amount of the vital fluid at one and the same time, the conclusion seems inevitable that a principle of antagonism must come into play somewhere; that, in short, certain parts cannot receive more than a definite amount of blood at any given time except at the expense of other parts. This seems almost proved from the next fact for consideration.

4. When the great splanchnics, or vaso-motor nerves for the abdominal viscera are irritated, these viscera are rendered anæmic by contraction of their arterioles, while the blood rushes in large quantities to the head and extremities. If, on the contrary, they be divided or paralysed, the blood accumulates in the viscera, and anæmia ensues in the head and extremities.

These facts, to my apprehension, clearly indicate both a law and mechanism of antagonism. Additional facts of the same kind might be mentioned. Lovén is said to have observed (*Lancet*, Vol. I., 1872, page 70) that contraction of vessels in one part was attended with dilatation in some other part of the body, and similar statements are made in Carpenter's *Physiology*, page 574, in reference to some experiments of Bernard, which show that any unusual amount of blood in any part is supplied at the expense of other parts.

5. A fifth class of facts of great importance remains to be stated. The antagonistic nerves which control the movements of the heart, and the difference in its rate and mode of action as one or the other class of nerves predominates are, on this view, adapted to meet the requirements of the blood supply to different and antagonistic parts of the system. If this be so, different areas come into antagonism with each other, not only in respect to the quantity but also to the manner of their blood supply.

If such a law is in constant operation it must play an important part in both physiological and pathological phenomena; but it is not easy to determine how the principle operates between different parts in the endless variety of both morbid and healthy states which may occur in the organism. If the supply of blood and oxygen be limited, it might be stated in a general way that any organ or system of organs which in a state of activity makes an increased demand on that supply is antagonistic to all the rest of the system. It is often said, and apparently with truth, that excessive muscular or mental activity proves injurious to digestion by robbing the stomach and other viscera of the blood which they then require, whilst the highest degree of mental or muscular work is best performed when the viscera are not overtaxed. This is why purging and fasting are found to clear the brain and increase mental activity for a time. Looking to diversity of function, therefore, and other considerations, we might divide the entire system into antagonistic areas, the supply of blood to which is regulated by the vaso-motor nerves and nerve-centre by a law of antagonism, at least when the demand passes a certain limit. There appear to be two large primary areas, one consisting of the abdominal viscera (except the kidneys), the other of the spinal cord, including its cranial prolongation with the nerves and muscles in anatomical connection. The kidneys and skin form a subsidiary or excretory area, having a relationship to both of the former areas. A minor antagonism probably comes into operation between different parts of the two principal areas, which are thus redivisible

into minor or secondary areas. With respect to the cerebrum, it may sometimes be regarded as an independent area; in other states it is to be classed sometimes with the viscera, as opposed to the muscular area; at other times with the latter in opposition to the former.

Before noticing how the blood supply to these areas is regulated by the vaso-motor nerves and by the movements of the heart, a few facts must be premised as to the relation which obtains between contraction and dilatation of vessels, and the interchanges going on between the blood and tissues. The minute contractile arteries are diminished in calibre in proportion to the influence which the vaso-motor nerves exert upon them; when that influence is at a maximum, there is complete occlusion of the vessel or so-called vaso-motor spasm; when it is at a minimum, or suspended, there is the extreme of dilatation, and between these extremes we may have every intermediate degree of patency. In direct proportion to the functional activity of any part is the dilatation of its arterioles. Tissue activity, therefore, is antagonistic to vaso-contractor nerve power; the one is inversely as the other, as Handfield Jones has formulated it. Besides this functional or histolytic activity, the tissue must also take in new material from the blood wherewith to form fresh tissue, whilst the waste products must be got rid of by absorption. It is of great importance to notice that the latter, or histogenetic operations, go on most actively when the vessels are contracted; thus Goltz has shown that absorption by the veins and lymphatics is most active during periods of vascular contraction. It follows that histogenetic activity is antagonistic to histolytic or functional, that is, the one is inversely as the other, or, at least, the highest degree of the one is incompatible with the highest degree of the other. If, therefore, the normal alternations between contraction and dilatation of the vessels of any part do not occur, it is evident that the usual interchanges between the blood and tissues will be interfered with, and functional disorder, leading ultimately to organic disease, will result. And if

there be areas antagonistic to each other with respect to blood supply, as here supposed, it is clear that these alternations will become imperfect if one area predominate unduly for a certain length of time over the other.

Taking now, by way of illustration, the two great areas, the nervo-muscular, and the visceral or (including the cerebrum) the cerebro-visceral, I conceive that the laws of antagonism which come into operation between them, when the blood supply to either goes beyond a certain limit, are probably as follows:—

1. Tissue activity in the one area, when above a certain degree, is antagonistic to that of the other; that is, tissue activity in the one is inversely as that of the other.

2. Vaso-motor power in the one area is inversely as that of the other; or, vascular contraction in the one is in direct proportion to dilatation in the other. We have seen already, as formulated by Handfield Jones, that tissue activity in any part antagonises the force which the vaso-motor centre transmits to the vessels of the part, and in proportion to the diminution of this force its vessels dilate. According to Prof. Rutherford, an influence is sent from the tissue through its vaso-inhibitory nerves to the vaso-motor centre, whereby the action of the latter is reduced. If the view here advanced be correct, the force which the vaso-motor centre withdraws from any area in a state of activity is transferred or reflected to an antagonistic area.

3. A further difference appears to obtain between these areas. Tissue activity in the muscular area stimulates the cardio-accelerator, or sympathetic cardiac nerves, thus causing a rapid pulse; activity in the other area (generally, but perhaps not in all parts of it) stimulates the cardio-inhibitory fibres of the vagus, thereby causing a slow pulse. According to Ludwig, muscular exertion accelerates the heart's action reflexly through the sympathetic cardiac nerves. Facts serving both as proofs and illustrations of these statements might be drawn from phenomena manifested by the organism in health, as from the state of thought or cerebral activity; muscular action as in running

or any violent exertion; and from the condition of sleep and its opposite, the waking state, but this would lead us much too far. I would here observe, before going farther, that in supposing a principle of alternation and antagonism to operate in some such way as above indicated, I freely admit (what seems proved by direct experiments) that there are conditions in which there is an unusual degree of vascular contraction and increase of tension throughout the body generally, as appears to be the case in some forms of chronic Bright's disease, and that there are, probably, other states in which there is abnormal dilatation, as apparently occurs when the upper cut end of the depressor nerve (of Cyon) is irritated, with a lowering of the blood pressure. I believe these facts to be quite compatible with the antagonism here supposed, which has other evidence to support it, and has to be taken into account as well as those other phenomena.

To proceed now to pathological questions, particularly to convulsive diseases. Let us take only a case of fully-developed and general convulsions—either the fit of epilepsy or the epileptiform seizure in uræmia, &c., which in its greatest intensity is almost identical with the former (Roberts' "Renal Diseases," page 426), omitting whatever modification of view may be necessary in the case of partial and less developed fits. What is the state of the circulation during the paroxysm? Kussmaul and Tenner, and others, have shown that the onset is associated with an anæmic state of the brain, but Rokitsky seems rather to demur to this conclusion, maintaining that such a state of anæmia is only momentary and rapidly passes into hyperæmia. Dr George Johnson has expressed the opinion that anæmia of the cerebrum, which he supposes due to arrest of the general circulation, is in all probability the immediate determining cause of an attack of general convulsions in every case, but some still seem to suppose it possible that it may be coincident with cerebral anæmia in one case and hyperæmia in another. The latter view would appear to be no longer tenable. But if the cerebrum be anæmic, is it due to arrest

of the general circulation or to contraction of cerebral arterioles only—a contraction sufficient to antagonise the heart's action? What, moreover, has become of the blood? Are other parts, as the muscles, also anæmic, and is the excess of blood in the veins? I am disposed to believe that the general circulation is not arrested, but that while the blood is shut off from a certain area by powerful vascular contraction, in which the viscera are very probably to be included along with the cerebrum, it is circulating freely through another part—namely, the muscular area, which thus receives the excess of blood from the anæmic regions. This probably continues till near the end of the stage of clonic spasms, the cerebral anæmia being maintained by the same condition of the minute arteries, and being the cause of the continued unconsciousness. That this unconsciousness is due in the stage of tonic spasms to anæmia and in the next stage to the presence of carbonised blood in the cerebrum, is an opinion which even the weight of the highest authorities cannot induce me to accept. Towards the end of the clonic stage the state of the circulation becomes reversed. The muscular activity failing, chiefly through defect of oxygen supply, the contracted arterioles of the cerebrum, and (if the supposition above given be correct) of the viscera, begin to dilate; less blood is determined to the muscles, until finally the exhausted muscular area is left in the opposite state to that which existed at the commencement, with a proportionate cerebral and visceral hyperæmia. The more powerful and long-continued the previous spasm of cerebral arterioles, the greater the subsequent dilatation and congestion (Secondary Cerebral Congestion of Trousseau). Cerebral congestion would seem to be invariably associated with muscular weakness and inactivity, and never with a state in which the muscles are energising.

To take, now, uræmic convulsions, confining our attention to those which sometimes come on in the course of scarlatinal dropsy, by what train of events is that state of the circulation which seems to be invariably associated with convulsions brought about? I believe that in the latter case

the only difference is that the cerebral anæmia which marks the onset of the attack is immediately consequent on a high degree of the opposite condition, or hyperæmia. There is at the beginning of the affection, congestion of a large tract of the visceral, and subsequently, if not from the first, of the cerebral area of the circulation. *Post mortem* investigations prove this to be the case. "The most important lesions found after death," say Meigs and Pepper (*Diseases of Children*), "are, besides the altered condition of the blood, congestions of different parts of the body, particularly the brain, serous membranes, kidneys, spleen, glands of Peyer, and intestinal follicles." There can be little doubt that the kidney affection with albuminuria is merely a concomitant, and not a cause of the general condition, a view which many authorities seem now disposed to entertain also with respect to chronic Bright's disease, at least in its earlier stages. This visceral hyperæmia implies an opposite state in the muscular area, undue contraction of arterioles, and diminished power in the muscles when called upon to energise. The normal interchanges between the blood and tissues will be interfered with, therefore, in both areas, though differently in each, and ultimately, from the alteration of the blood and other causes, these processes are nearly altogether arrested. If the cerebro-visceral congestion has not been previously checked by treatment, or relieved by effusion of serum into some part of the area, it must now reach its extreme limit, when, if the patient survive, a reverse process must be set up. This transition state probably corresponds to the occurrence of headache, vomiting, defective vision, and complete suppression of urine which then ensue. One of two alternatives may now take place. The congestion of the viscera may be relieved by effusion taking place in the pulmonary area, giving rise to acute pulmonary œdema, and if this take place convulsions will be less likely to declare themselves. If this does not occur, the tissue activity of the exhausted cerebro-visceral area failing, its vessels contract, while *pari passu* the blood is determined in greater amount to the muscles, until there rapidly results

complete cerebral anæmia, and that state of the circulation generally which is invariably coincident with an attack of convulsions. This change may be denoted by a sudden transition from a slow to a very rapid and strong pulse. Traube traces the convulsions also to cerebral anæmia brought about in a different way, but independently of any direct agency of urea or other product in the blood. Although urea, creatine, creatinine, &c., are present in the blood in such cases, and form part of the general conditions which render the blood unfit to nourish the tissues, and which may thus culminate in convulsions; yet I believe it does not by any means follow that they are poisons capable of producing such a result of themselves. That these substances prove innocuous when introduced into the system of healthy animals by the stomach seems sufficient proof of this. Their effect when injected into a vein or into the artery supplying a muscle is not conclusive, other disturbing elements thus coming into operation. I believe that the onset of convulsions depends on the above-mentioned change of the circulation taking place, and this is determined not so much by the amount of these substances in the blood as by other circumstances. In these variations of the circulation is probably to be found the explanation of those cases of puerperal eclampsia in which there is no albuminuria. The foregoing considerations, perhaps, furnish a reason why uræmic convulsions frequently last so many hours (with but short intermissions), and why they increase in intensity as they proceed. They are less severe at first, because the transition takes place gradually, and the blood from previous defective respiration is deficient in oxygen; they continue longer, because the exhausted cerebral tissue requires a considerable period of repose before it can again resume activity and dilate its arterioles, and thus antagonise the muscles.

The same principles might be applied to convulsions occurring in other conditions, especially to those of pregnancy, hæmorrhage, &c., and also to explain the efficacy of blood-letting in arresting them, an efficacy which seems

undeniable, at least in the case of the convulsions of scarlatinal dropsy, but I have already spent too much time over these merely theoretical points.

I shall now read notes of a few cases of scarlatinal dropsy in which bloodletting was resorted to for pulmonary oedema and convulsions in the course of the affection. These cases are not so fully detailed as might be desirable, but perhaps are quite sufficient for the object in view. The first case in which I employed venesection, about four years ago, may be merely mentioned. In February, 1873, a young man, æt. 19, was seized with a convulsive paroxysm one day at 11 A.M., having had mild scarlatina a week or two before, for which he sought no medical advice. Dr Campbell, of Partick, saw him after the fit. His face was puffy, but there was not much anasarca; his urine was suppressed. He had another fit at 1 P.M., another an hour or two later, and between 5 and 8 P.M. the attacks were very violent and nearly continuous, characterised by tonic and clonic spasms, with occasional stertorous breathing. During this time Dr Campbell had applied cold to the head, hot applications to the loins, &c. I saw him with Dr Campbell at 8 P.M. He was in violent convulsions; unconscious, foaming at the mouth, with dilated pupils. We at once bled him from the arm to 16 oz., three men holding him steady while we did so. The fits ceased almost immediately, slight tremors only continuing, and foaming at the mouth shortly disappeared; he continued comatose till 11 P.M., when Dr Campbell, who had stayed with him till that time, left him for the night. Next morning Dr Campbell found he had slept on till 6 A.M., when he awoke, said he felt well, and took some food. In the morning the wound in the arm burst open and he lost a good deal more blood. Dr Campbell found his pulse of the natural standard, and he did not look the worse of the loss of blood. He now got diuretics, passed albuminous urine loaded with urates, the albumen daily diminishing, and he improved so rapidly that he went home to Aberdeen at the end of six days. Six months afterwards Dr Campbell saw him, when he was in the best of health, and not at all anæmic.

The following case appears to show a decided effect from merely local blood-letting in acute pulmonary œdema:—

P. F., æt. 8, was seized with scarlatina, 3rd September, 1876. There was but little sore-throat, and the attack was very moderate. Between the second and third week dropsy came on, with scanty, smoky, albuminous urine. He continued to take his food well, his pulse was 70, and the case was by no means severe at first, the urine not being so highly albuminous nor so rich in blood corpuscles as it often is in such cases, and the amount of anasarca was but slight throughout. He was treated with a diuretic mixture containing tincture of digitalis, and was occasionally purged by compound jalap powders; no hot packs or baths, or other means to produce diaphoresis, were employed. On the 29th, nine days from the commencement of the dropsy, he became drowsy, suffered from headache and vomiting, and took no food. Urine became now entirely suppressed. On the 30th, continued drowsiness, headache, vomiting, and suppression of urine and twitchings of the arms. Consultation with Dr Fergus. Ordered a calomel purgative, as he had vomited the last jalap powder administered; turpentine stupes to be applied over the loins; prognosis grave. The calomel was retained and acted during the night, there being two or three loose evacuations, and patient also passed a considerable quantity of turbid urine containing albumen and urates. In spite of this, on the following morning, 1st October, he appeared worse, a new train of symptoms having set in. There were now no twitchings, but great dyspnœa; respirations short and quick, 60 a minute; pulse 160. He lay only on the right side. On auscultation, respiratory sounds on left side normal; on right side, as far as could be ascertained without turning over the patient, crepitation audible. Four leeches were ordered to be applied to the right side. This was about mid-day. At 8 P.M., on visiting the patient, I found that the leeches had not been applied, a neighbour having persuaded the parents that the case was hopeless. Pulse 160; still greater dyspnœa. I now ventured to turn him partly over, and found evidence

of intense pulmonary œdema on the right side. I still insisted on the leeches being applied, and it was done. At 11 P.M. the father again desired me to visit him, as he now thought he was dying. The leeches had drawn well, and the bites bled freely. I found the breathing still rapid, pulse quicker than before, 180, very small and compressible,—the rapid soft pulse which follows depletion. I was convinced he was sinking fast. At 9 o'clock the following morning, when the patient's father called on me, instead of being informed of his death, as I expected, I was agreeably surprised to learn that he was a great deal better, in fact, quite a different being, as the father said. It appeared that at 12.30 of the previous night his aunt, who was watching him, remarked that his breathing became much easier, and he fell into a quiet sleep, and altogether appeared so much better that it seemed to her he had got a "turn," as she expressed it. He slept on till 7 A.M. At 11 A.M. I found his pulse 80; breathing natural; no trace of pulmonary œdema. He soon passed large quantities of urine loaded with urates, improved rapidly, ate well, and was up in a week and running about the house.

The next case, brother of the above, presents a contrast to it in its termination.

L. F., æt. 10, seized with moderate scarlatina, 17th September. He was observed to be dropsical about the 29th, and the case ran much the usual course till 7th October. The pulse was slow throughout, 58 to 60, and anasarca but slight. Besides being treated with occasional purgatives, he was frequently sweated profusely by means of hot bottles, hot flannels, &c.

8th, 9th, and 10th October.—Pulse still 58, full and resisting, indicating increased arterial tension; but little anasarca; no effusion anywhere; but headache, vomiting; still moderate quantities of urine passed.

11th.—No headache nor vomiting; appeared rather better.

12th.—Pulse still 58; suppression of urine since previous evening; severe headache, getting gradually worse, vomiting. His headache became very violent till about 7 P.M.,

when he was observed to stare vacantly at the wall, and then became unconscious and convulsed. Being hastily summoned, I found him on arrival violently convulsed, with but brief intermissions; unconscious, face livid, pulse 160, full and strong; heart acting very powerfully, the apex beating forcibly against the thoracic wall. I employed ice to the neck and back, with other means, for about half an hour, but with no effect. I then bled him from the arm to 12 ozs. The fits immediately ceased, no movement continuing beyond a slight twitching; unconsciousness continued. He was turned over on his side, when he lay quite still, as in sleep or stupor. It was now about 8 P.M. Visiting him again at 11 P.M., I found him still asleep, so that I was content with only feeling his pulse, which was 180, very soft and weak. Next morning I found that he had slept all night, and on waking up had no headache, only complained of his arm. He asked for food, and took some tea and toast. His friends remarked that his expression and colour were better than they had been throughout his illness. I found his pulse 80, his expression good, and, in fact, he was comparatively well. He soon began to pass urine in considerable quantities. In a few days it became very bloody, but under the administration of gallic acid the blood soon disappeared. He improved rapidly, and at the end of 7 days had a ravenous appetite, was, in short, quite well, and not at all anæmic. I should add that diuretics were continued during convalescence.

Copious depletion was the sheet-anchor of the old practitioners in scarlatinal dropsy, not only for such complications as convulsions, but also in the early pyrexial stage. In the case of convulsions, Dr West says that he has found chloroform so successful that he has been enabled to dispense with that free abstraction of blood which he formerly considered necessary. Meigs and Pepper condemn blood-letting in this affection at any period, asserting that its use, even in the event of convulsions, is sufficiently counter-indicated by the circumstances of the concomitant affection. It is interesting to contrast the results of these different views as applied in

actual practice. Dr West states that convulsions in this disease are not generally fatal; of 12 cases which came under his own observation, 7 recovered and 5 died. In 4 of the 7 which recovered large depletion was resorted to. He also mentions that of 13 cases collected by M. Rilliet, only 3 proved fatal, although we are not told how they were treated. Now, of 5 cases of convulsions occurring in the practice of Meigs and Pepper, all were fatal; and other 2 cases with uræmic symptoms seen by them in consultation also proved fatal. I am disposed to believe that no other plan of treatment is so likely to prove successful as chloroform or blood-letting, and I am by no means certain that the former is to be preferred. Dr West leads us to infer that if the convulsions can be arrested without loss of blood, so much the better for the subsequent convalescence. This may be so when blood is drawn to such a large amount as was then thought necessary; but there is reason to believe that the abstraction of only a moderate amount is sufficient, and that this small loss is rather favourable to convalescence. He goes on to state that after the convulsions have ceased, the patient may succumb from effusion internally, a result which, as I think, depletion would rather tend to prevent. I have not had the opportunity of treating a large number of cases, but here it gives me great satisfaction to refer to an article by Dr Bramwell, of Perth, published in the *Edinburgh Medical Journal*, July, 1875. In 32 cases of scarlatinal dropsy which occurred in his practice, partly in hospital, during an epidemic of scarlatina there, he frequently had recourse to general abstraction of blood, with the result of only one death out of the 32 cases, and that a case which was seen too late for treatment to be of any service. At the same time, 20 deaths from the same disease were registered in Perth. Amongst his cases were some of both pulmonary œdema and convulsions, in which he did not resort to depletion till these grave complications set in; in other cases he employed it at an earlier stage, and in all with unequivocal success. He generally found free diuresis set in 48 hours, or less, after blood-letting. After convulsions,

however, the diuresis which, if the patient survive, generally soon comes on, is not to be attributed to the blood-letting, or to any kind of treatment. For if the theory of these convulsions here suggested be correct, it follows that their occurrence marks an entirely new stage of the disease, a stage in which the circulation is radically altered, and which ere long restores the perturbed equilibrium, if the patient do not succumb. In fact, they may be compared to a crisis—a stormy and dangerous one, in which it would seem that the safest course is the old-fashioned plan of throwing some of the cargo overboard.

Shortly after this, I abstracted blood in a case before it had assumed a serious aspect. The case was that of a young man, *æt.* 18, who had been dropsical for 8 days. Urine albuminous, smoky, *sp. gr.* 1014; moderate anasarca. He was bled from the arm to 12 ozs. The abstraction produced no marked effect, but the patient gradually improved; in a few days the albumen and smoky colour left the urine, and at the end of 10 days he had regained his usual health. Here was no result entitling us to say the depletion had any decided effect, although I think it was beneficial.

I shall just refer to a single case more. A girl,—Brown, *æt.* 9, had scarlatina of a mild, favourable type, in October, 1876, from which she recovered in a few days. I warned the mother as to what might result; but the parents were in poor circumstances, and it is to be feared the patient was rather neglected. It was not till she became comatose, and when albuminuria must have existed for a considerable time, that I was again summoned. I found the patient comatose, the face puffed, pallid, and somewhat livid, the veins being markedly visible. Teeth clenched, but not very firmly; foaming a little at the mouth. Pulse 140, of fair strength and fulness; cardiac sounds loud and distinct; respirations 30, free and unimpeded. Pupils moderately contracted, insensible; orbicularis sensitive, responding to the touch. The eyeballs were both turned to the left, but continually and rapidly oscillated to and fro from the left to a point short of the middle line, with a nictitating movement. There

were no convulsions, only a few slight twitches. There was not a great deal of anasarca; no internal effusion. Some of her urine was shown me, which was albuminous, smoky, and evidently containing a considerable amount of blood corpuscles.

This case seemed to me a very unfavourable one, from the patient's general appearance, and it was after a little hesitation, and without being sanguine as to the result, that I ventured on venesection. I was persuaded, however, all prejudices against the practice to the contrary, that it would do no harm. 10-12 ozs. of blood were drawn from the arm. On tying the ligature round the arm before opening the vein, spasms of the forearm and hand came on, which continued as long as the ligature was applied, and for a short time afterwards. Here, apparently, was a fact for Dr Radcliffe. During, or immediately after the flow of blood, a change took place in the eyeballs. The nictitation became more lively, the movements described a wider arc, and once or twice the eyeballs were rotated quite to the right side. A few minutes after the venesection, the pupils became much dilated, still insensible to light. The flow of saliva continued, and the general appearance of the patient was not perceptibly altered. The pulse five or ten minutes afterwards was quicker than before, 150-160; respirations also quicker, being 35. I now (4 P.M.) left the patient, returning at 8.30 P.M. On inquiry, I found that patient's condition had apparently improved at 5 P.M., when she seemed to fall into a natural sleep. At 8 P.M. some one in the house had spoken to her, to ascertain if she was conscious, and she had waked up and answered, but was irritable and frightened. On examination (8.30 P.M.) I found patient asleep; eyelids perfectly closed; breathing very quiet, respirations 25. Pulse 80 (exactly half of its rate $4\frac{1}{2}$ hours before). Face still pale, but no clenching of the teeth, no saliva at the mouth. Ordered to be kept very quiet, and to have only water and beef-tea when she awoke. Next morning I found that she had slept without intermission till 6 or 7 A.M. I found her cheerful, pulse 80 as before, still

pale. She began soon to take her food well, and made a good recovery without any medicine. At the end of a fortnight or so some iron was prescribed, as she still appeared somewhat anæmic, although her mother said she had always been pale. Some months afterwards I saw her with her mother, when she was perfectly well.

In every case, then, in which I have tried bloodletting in scarlatinal dropsy, it has proved eminently successful. For my own part, I am disposed to doubt if an equally good and certain result could have been secured by any other means whatever, not excepting chloroform. Besides, it is much more available than the latter remedy, a point of great, indeed, vital importance, frequently, with the busy practitioner. The effect of the depletion in the above cases, and many of the symptoms observed in their course, might, as I fancy, be satisfactorily explained by reference to the principle of antagonism, did time permit. I will only add that the serious aspect which these cases assumed led me to suspect that the treatment pursued in the earlier stages was perhaps not the best, and possibly tartar emetic, as recommended by West, or gallic acid, highly praised by many, would have been better. From the views above advanced, I conceived the idea that digitalis, at all events, is not admissible, but probably injurious in many cases of this affection; and that atropine, which paralyses the cardio-inhibitory fibres of the vagus, would probably counteract the morbid state, as it does the action of calabar bean. In some cases of scarlatinal hæmaturia, with little or no dropsy, Dr Wade, Birmingham, found quite the opposite course, viz., the administration of the latter drug attended with much benefit (*British Medical Journal*, Vol. II., 1875, page 483). I am convinced that different, and, indeed, diametrically opposed agents are called for at different stages and in different phases of the affection. If the state of the circulation be different after convulsions from its previous condition, different remedies may be indicated. It is interesting to observe that in the case of the boy Ferguson it was only after convulsions that hæmaturia supervened. I accord-

ingly administered belladonna, in 10 to 15 m. doses, four times a day, in four subsequent cases in my practice, using no other means along with it. Two of these were unfavourable cases, being considerably advanced before this treatment was commenced, with a greater degree of anasarca than any of the former cases had presented. All the four made a good recovery within 7 days or so. I observed with much interest that its first effect on the urinary secretion was apparently unfavourable; it became more scanty, and periods of 24 or 36 hours' suppression occurred (in the two cases in which it was used from the beginning) during the first few days of the disease, a circumstance which I do not remember having ever noticed before. Improvement, however, soon set in, and I should not hesitate to try the remedy again, in preference to a farrago of sudorifics, diuretics, and purgatives, having always the lancet in reserve in case of danger.

II.—RECOVERY AFTER PYO-PNEUMOTHORAX.

By J. AIKMAN, M.D., Surgeon to the St Peter Port Hospital, Guernsey.

THE perusal of Dr MacDonald's records and remarks on the subject of pneumothorax in the *Edinburgh Medical Journal* for February, 1877, induces me to publish some details of a case which fell under my own notice during the past year.

On the evening of the 20th of September, 1876, I was called to see a fair-haired, thin-skinned child of 8 years of age. Until the afternoon of the same day she had enjoyed fair health, but had then been seized with sharp pain in the right side of the chest. Although the situation of the pain was much lower than is usual, there was something in its character which suggested the presumption of pleurisy, and to clear up this doubt I examined her chest with some care. There was no abnormal sound detectable. Next day, as the pain continued, I repeated the examination with a like result, but on the 22nd I detected a pleuritic rub in the

lateral region. The thermometer on each occasion registered from 101° to 102° Fahr., and once reached 103° Fahr. Two days later, the right chest was half filled with fluid, and dulness with soft râle existed in the right apex.

On the morning of the 26th I was astonished to find the upper part of the right chest loudly resonant, the breathing amphoric, an occasional metallic tinkle, and the Hippocratic succussion sound readily produced. By the evening of the same day the pneumothorax had remarkably developed; the breathing became very difficult, and the odour of the breath intensely foetid. From this date matters grew daily worse. The size of the right chest continued to increase, the intercostal spaces were bulged out, the line of dulness perceptibly rose, night sweats set in, and the result was emaciation, apparently incompatible with life; while the offensive state of the room, poisoned by the fœtor of the child's breath, scarcely made prolonged life desirable. Soon the later signs made themselves evident; the urine and fæces passed involuntarily, and the voice became inarticulate.

On the 13th of October Dr Francis Carey in consultation advised the temporary relief which tapping afforded, and, accordingly, I made an incision about two inches long in the line of the axilla. I can give no idea of the amount of pus which escaped, beyond the fact that when the flow ceased the child, as she lay in bed, was buried in a pool sufficiently deep to conceal her hips and the lower part of her abdomen, and I can give still less idea of its fœtor. When the contents had been fully discharged, we washed the cavity out with a solution of the purest carbolic acid in forty parts of tepid water, and this we repeated daily until the kidneys became affected almost to the total suppression of urine. Between times a large-sized drainage tube did good service in keeping the cavity empty. We expected nothing beyond temporary relief, but persisted in the washing out as often as was practicable, and the child began to improve. For some weeks nothing was evident beyond the decrease in quantity and improvement in quality of the discharge, the gradual disappearance of the night sweats, and at a later

date the falling of the hair and improvement in the appearance of the patient. Cod liver oil and tonics were soon added to the treatment, and by the 29th of November the condition was so good that the drainage tube was removed and the wound allowed to close.

A month later she was playing about the room. Some dulness still remains over the whole side, but it has rather diminished between the dates of examination, while she is free from all sign of active disease and is becoming quite plump.

The pathology of this case is a little obscure, but I am inclined to think that in the first instance there was acute lobular pneumonia of the apex, limited in extent and proceeding to destruction of the lung tissue; that the pleurisy was a preservative act of nature dependent upon the spread of inflammation from contiguity of tissue, and designed to prevent the rupture of the lung—the attempt not being successful. If such was the case, the remainder of the history is simple. The slough was well separated before the incision was made, and the dependent position of the opening permitted a free drain while contraction and healing progressed. It is difficult to concede any tubercular element in the case, principally because of the extensive opportunity for morbid deposit, and the perfect quietude of the symptoms until the present. It is equally certain that the pneumonia was not near the base, because air entered the cavity when the lower two-thirds of the chest were full of fluid. If we hold that pneumonia of the summit is *always* tubercular (and Trousseau, who is a great opinion on the subject, evidently does not), there is yet the possible alternative of abscess. True abscess is unlikely, but the child lived in a tobacconist's shop, where the air was loaded with particles which, if inhaled, might have set up local mischief.

Does any one know whether snuff manufacturers are peculiarly liable to any form of phthisis?

III.—NOTES OF CASES OF DIABETES MELLITUS, SHOWING THE EFFECTS OF DIET AND VARIOUS THERAPEUTIC AGENTS ON THE AMOUNT OF SUGAR EXCRETED. (*Continued.*)

By JAMES BARR, M.B., L.R.C.S., Edinburgh,
Late House Surgeon, Northern Hospital, Liverpool.

CASE III.—A. M'G., æt. 37, married, labourer, admitted under the care of Dr Davidson, April 24, 1875, complaining of great thirst, polyuria, &c., of two years' standing.

He gives the following account of himself, and of the treatment which he has had since the commencement of the present illness:—When in Chicago, in September, 1872, he suffered from a very severe attack of typhoid fever, which was accompanied or followed by “three” abscesses in the right breast. He also states that he had “pneumonia of the right lung.” From these complications he did not quite recover until April, 1873, at which time he first resumed work, but he had not wrought more than a few days when he noticed the polyuria and great thirst. He was then under the care of a medical man till June, who prescribed “all kinds of animal food, except liver; all kinds of fish, except shell-fish; bran bread; no vegetables except cabbage and celery; and various medicines.” He found benefit from this treatment.

In June, 1873, he entered an hospital in Chicago, where the diet was similar to that before prescribed, but he had in addition from one-half to one gallon of buttermilk daily. The medicinal agents were, “tincture of iron, bromide of potash, and cinchona.” He was afterwards put on an almost purely animal diet, and had water to drink. He was seven months in that hospital.

In March, 1874, he went to Philadelphia, and was treated at one of the hospitals there as an out-door patient for several months. At the end of July he became an in-patient. He was put on the skim-milk treatment, and had half a grain of opium thrice daily, but he only submitted to this dietary for 18 days, as he says he “could stand it no longer,” as he was getting very weak, and rapidly losing

weight. He left there for this country on the 15th October, and landed in this town on the 31st.

He was in the Castlebar Infirmary from November, 1874, to February, 1875, and since then he has been in various parts of England, but not in any hospital, nor has he had any treatment except that directed by his own extensive experience of the various treatments of medical men.

Present Condition.—His body is very spare, muscles are soft and flabby, tongue slightly coated with a yellowish fur, appetite voracious, his thirst is very great, and he drinks about 14 pints of fluid daily, polyuria to about 350 fluid ounces daily, bowels confined, his skin is very dry, pulse feeble and slow, 52 per minute.

Physical Signs.—The hepatic dulness measures $3\frac{1}{4}$ inches in the line of sternum, and $4\frac{1}{4}$ in the lines of nipple and axilla. The splenic dulness measures 4 by three inches. The transverse cardiac dulness measures $3\frac{1}{2}$ inches, heart sounds are weak, but nothing otherwise noteworthy. The expansion of chest is good, and equal on both sides; the percussion is rather hyper-resonant; respiratory murmur is loud and full in volume, inspiration is rather wavy at both apices, especially the right, and there are a few dry crackles.

He complains of failing memory, and is quite incapable for any continued mental exertion. His vision is defective, both lenses are opaque, the right most so. He was ordered a placebo, and the ordinary hospital fare, with bread *ad libitum*.

April 30th.—He complains of very severe headache, his pulse is weak, 57 per minute. To-day he began the following non-farinaceous diet:—Breakfast—Coffee, 2 eggs, bacon, and cheese. Dinner—8 ozs. of meat, green vegetables, and cheese. Supper—Coffee, bacon, cheese, and green vegetables.

May 8th.—He had a purgative of calomel and jalap yesterday, which has freely moved his bowels.

May 9th.—Last night he complained of colicky pains in his abdomen, and he vomited. To-day he is in bed, his tongue is slightly furred, pulse 66, feeble; skin warm, urine only 104 fluid ounces.

Determinations of Sugar in the Urine of Anthony M'G.—, by Roberts' Yeast Test. The Examinations were made daily, from which the following averages are calculated.

DATE.	Mean quantity of fluid drunk in pints.	Mean volume of urine in fluid ounces.	Mean specific gravity of urine.	Mean amount of sugar in grains.	Treatment.	Diet.	REMARKS.
1875.							
(Inclusive.)							
April 25-29 ...	14½	351	1033	8707	Infus. Quassia 3ss. ter in die, Olei Morrhua 3i. ter in die.	Full Diet.	The three prominent symptoms of Diabetes are extremely well marked.
... 30—May 4	10	248	1035	7228	May 7, Calomel grs. v, Pulv. Jalapæ Co. 3i.	Breakfast: Coffee, 2 eggs, bacon, cheese. Dinner: Steak, green vegetables, cheese. Supper: Coffee, bacon, cheese, and green vegetables.	When the amylaceous articles of diet were cut off, the urine at once fell 100 oz., and the sugar 1500 grs. On the 6th the urine was reduced to 192 oz., and the sugar to 5088 grains.
May 5-7 ...	8	199	1035	5124	May 11-25, Aquæ Calcia, ad libitum.		On the 8th and 9th a very great reduction took place, owing to the purging. The quantities afterwards rose, but fluctuations occurred according to the state of the bowels, the amounts being low from the 16th to the 18th, inclusive, when the motions were loose.
... 8-15 ...	6½	122½	1038½	3510			
... 16-18 ...	6½	116	1034½	2918			
... 19-21 ...	7	137	1035	3713			
... 22-23 ...	7	136	1036	4128	Mist. Cretæ Co. 3i. ter in die.		With the lessening of the diarrhoea, the quantities, both of urine and sugar, slightly increased; but when that complaint ceased, they again diminished, and on the 25th the urine measured 132 oz., and the sugar only amounted to 2904 grs.
... 24-25 ...	7	130	1035	3244			

May 25th.—Since last note his bowels have kept very loose, and there has been a corresponding diminution in the quantity of urine, the amount ranging from 96 to 156 ozs. the smaller quantities occurring on those days on which his bowels were most free. To-day the diarrhœa is less, and the amount of urine is 128 ozs. His treatment for the diarrhœa has been lime water, and since the 22d *Mist. Cretæ Co. ʒi. ter in die.*

May 26th.—He feels very well, diarrhœa ceased. He absconded to-day.

CASE IV.—J. T., æt. 20, blacksmith, admitted to the Northern Hospital under the care of Dr Dickinson, March 16, 1875, with well pronounced diabetic symptoms.

His complaint began about eight weeks ago, his attention being first attracted by the large quantities of water which he voided. The weakness and loss of flesh increased so rapidly that in ten days he was obliged to give over work. Prior to this he always enjoyed good health, and never suffered from any complaint. He has never had any sexual intercourse, and never masturbated. He has been engaged as a blacksmith for the last seven years, during which time his work has been very heavy, but he is not aware of having suffered in any way therefrom. He never suffered from any injury to the head, nor has he been disturbed by any mental emotions; and there is no family history of diabetic or any nervous disease. He has always been very fond of confectionery, and for the last few years he has eaten about one shilling's worth weekly.

Present Condition.—He cannot say what was his former weight, but considers that he has fallen off very much in flesh, and he now only weighs 114 lbs. His body is very much emaciated, skin very dry and scurfy, tongue dry and glazed, thirst very great, appetite voracious, bowels regular, urine very abundant. His vision is dim, lenses rather opaque, and his mental capabilities are feeble.

He was now put on the full hospital fare, including an unlimited supply of bread, and from this time to the change of diet on the 28th his condition passed from bad to worse.

When the amount of amylaceous food was restricted there was a decrease both of the urine and sugar, but especially of the latter.

April 25th.—Since the complete withdrawal of the amylaceous food the reduction in the volume of urine, and in the amount of sugar has been very decided; and the improvement in the patient's general condition considerable.

May 6th.—He has much improved since admission, and considers himself stronger. His vision is better, appetite not so voracious, thirst not so great, bowels regular, tongue moist, coated in the centre with a slight fur; breath not very foetid, pulse 92, weak. His body is still much emaciated, and face shrunk and wrinkled. There is no change in his weight. He has been taking strychnia since April 1st with evidently great benefit to his general condition, but I think no part of the reduction in the amount of sugar or volume of urine is to be attributed to that agent. At present he is taking 3ss of ergotine, with what advantage remains to be seen.

May 10th.—He continues to improve; pulse 88, of fair strength. He is suffering from an eczematous condition of the prepuce and glans penis, for which he is ordered a lead and opium lotion.

June 25th.—His general condition has steadily improved since last note, but last night he began to suffer from vomiting, diarrhœa, and bilious headache, and to-day there is very little improvement.

The diarrhœa continued until the 30th, and while it lasted there was a proportionate decrease in the urine. The volume of urine on the 27th was 54 ozs.; 28th, 36 ozs.; 29th, 40 ozs.; 30th, 66 ozs.

July 1st.—The bilious attack has passed off, and to-day he feels very well; and the quantity of urine has reached 82 ozs.

August 6th.—His condition has been one of steady improvement since last note, not only as regards the diabetic symptoms, but also in his general health. He eats and sleeps well, enjoys a fair amount of physical exercise, and

likes to make himself generally useful in the wards. His thirst is not great, tongue moist, bowels regular. His skin is not so dry and scurfy; he is gaining in flesh, and now weighs 120 lbs., or 6 lbs. more than when he began the ergotiné.

He improved very much until the 28th, when at his own urgent request, he was discharged.

During the month of June he had ice applied along the spine, I believe with some benefit in lessening the amount of sugar, but its application was too intermittent to allow of any deductions therefrom.

In making the observations in the four cases of diabetes mellitus which I have recorded, the urine was always collected from eight o'clock one morning to eight o'clock the next, and the amount noted as that of the day on which the collection began, being the day which contained 16 of the 24 hours, and that on which the food was consumed. The samples submitted to analysis were invariably taken from the whole of the urine previously mixed, therefore, the estimations made on any given day were made upon the urine passed during 24 hours—including 8 hours of the morning on which the calculations were made, and 16 hours of the previous day.

The observations in all these cases showed that independently of any change of diet or alteration in medicine, the amount of urine and sugar varied from day to day, and especially when the patients were taking large quantities of amylaceous food, were these variations well marked; and as improvement took place in the diabetic symptoms, the oscillations lessened.

When using amylaceous food, the diabetic and general symptoms became greatly aggravated. The daily variations in the amount of urine and sugar were often great, but the total quantities were always large, and the averages showed high figures.

When the starchy food was cut off, and an animal diet substituted, the fall in the urine and sugar was at once very decided; and the quantities still further diminished, and

Determinations of Sugar in the Urine of John T——, by Roberts' Yeast Test, and by Volumetric Analysis with Fehling's Copper Solution, etc. The examinations were made daily.

DATE.	Mean quantity of fluid drunk in pints.	ROBERTS' TEST.			FEHLING'S TEST.		Weight.	Treatment.	Diet.	REMARKS.
		Mean volume of urine in fluid ounces.	Mean specific gravity of urine.	Mean amount of sugar in grains.	Mean volume of urine in cubic cents.	Mean amount of sugar in grammes.				
1875.										
(Inclusive.)							Lbs.			
Mar. 16-27	11	218	1037	7073	6170	453.4	114	Infus. Quassiae. 3ss. ter in die.	Full diet and one egg.	The amount of sugar varied from 5920 to 8976 grains, and the quantity of urine from 160 to 264 oz.
... 28-31	8½	211	1035.5	6292	5970	403.	.....		Breakfast: 1 pt. of tea, 2 eggs, bacon, 4 oz. bread and butter. Dinner: 8 oz. meat, 4 oz. bread, 2 oz. of cheese. Supper: 1 pt. tea, 4 oz. toasted bread, chop, 3 pints of milk daily.	With the change of diet the amount of urine and sugar diminished, and the daily variations were less.
April 1-5	10	234	1035	6955	6630	445.	114	Liq. Strychniae, m.s. viiss. ter in die.		The quantities again increased, owing to the patient making use of more bread than that prescribed.
... 6-14	9	204	1034	5512	.....	.....	.....	Liq. Strychniae, m.s. x. Tinct. Calumbæ ʒi., ter in die.		When he kept strictly to this diet and used the Strychnia, the urine and sugar both diminished, and there was a decided improvement in the general health.
... 15-16	7	186	1034.5	4934	5270	312.	.....	Liq. Strychniae, m.s. xii. Tinct. Calumbæ ʒi.,		

amylaceous food the quantities still further diminished, and there was very little variation from day to day.

When the quantities had become somewhat stationary or had attained their lowest points he had half a drachm of ergotina daily in addition to the strychnia. For the first ten days there was very little change (in fact Roberts' test showed a slight increase, but not so Fehling's), but after that there was a steady decrease; so that in less than six weeks there was an average diminution of 79 oz. of urine and 2000 grains of sugar. The ice seemed to effect a reduction in the amount of urine and sugar.

From the 25th to the 30th he suffered from diarrhoea, during which the amounts lessened, and afterwards there was a proportionate increase.

The quantities now remained pretty stationary, there being very little daily variation.

After the 25th, circumstances prevented the examinations of the urine, but the quantities voided were seen to remain steady, and the patient gained in health and strength, and on August 5th was six pounds heavier than when he began the ergotina.

From August 7 to 28 there was very little difference between the quantity of fluid drunk and that of the urine.

stituted for tea, and green vegetables for bread.

Bacon in place of chop for supper.

Tea

instead of

Coffee.

drinking water.

Former medicine, et Ol. Morrhuæ 3i, ter in die.

Liq. Strychn. m.s. xiv., Ergotina m.s. x., Infus. Quass. 3i, ter in die, et Ol. Morrhuæ 3i, ter in die.

Liq. Strychn. m.s. viiss., Ergotina m.s. v.

Infus. Quassiae 3ss., sex in die, et Olei Morrhuæ 3i, ter in die.

June 3, ice to the spine.

Liq. Strychn. m.s. xiv., Ergotina m.s. x., Infus. Quassia 3i, ter in die.

... 30— May 3	6	170	1035	4387	4816	285.6	114	Former medicine, et Ol. Morrhuæ 3i, ter in die.
... 4-15	6	168	1034	4415	4760	281.4	.....	Liq. Strychn. m.s. xiv., Ergotina m.s. x., Infus. Quass. 3i, ter in die, et Ol. Morrhuæ 3i, ter in die.
... 16-23	5	128	1035	3430	.....	.....	.....	Liq. Strychn. m.s. viiss., Ergotina m.s. v.
... 24— June 2	5	124	1033.5	3431	3510	218.2	.....	Infus. Quassiae 3ss., sex in die, et Olei Morrhuæ 3i, ter in die.
... 3-15	4	98	1034	2623	2780	168	.....	June 3, ice to the spine.
... 16-24	3½	89	1035.4	2422	.....	.....	.....
... 25-30	3	61	1034	1376	.....	.....	.....
July 1-8	3	75	1037	2860	2125	150	.....
... 9-25	3	73	1037.8	2369	.....	.....	.....
... 26— Aug. 6	3	75½	.....	.....	.....	.....	120	Liq. Strychn. m.s. xiv., Ergotina m.s. x., Infus. Quassia 3i, ter in die.
... 7-28	3½	73	.....	.....	.....	.....	.....

presented a smaller range of daily oscillations. When the patients were allowed a free supply of green vegetables their general condition seemed to improve, and their disgust to a purely animal diet was removed or prevented.

The administration of codeia and bromide of potash had a negative or only doubtfully beneficial effect. Strychnia, quinine, iron, and cod-liver-oil, while they improved the patients' health, did not seem to produce any marked reduction in the amount of urine and sugar.

Ergotine, which was only tried in the last case, and that on theoretical grounds, from its well-known power in contracting blood-vessels, I believe proved itself to be a most useful remedy, by the diminution in the quantity of urine and sugar; and by the great improvement in the patient's general condition, and the increase in weight which took place under its administration. Ice was applied to this patient's spine in June, on much the same grounds as the ergot was prescribed, and I believe its application was of considerable advantage, as shown by the great reduction which took place from June 3rd to 16th, when its use was most constant.

IV.—THE DISEASES OF CHINA; THEIR CAUSES, CONDITIONS, AND PREVALENCE, CONTRASTED WITH THOSE OF EUROPE.

By JOHN DUDGEON, M.D., Pekin.

THE subject of the present paper is a large and important one, and the time at my disposal will only admit of a very cursory glance at so large a theme. My object is to point out some of the more obvious of the differences in the diseases of the east and the west, and if possible to indicate the causes that are operating to produce these changes. On account of the great antiquity of the Chinese nation, the vitality of the Chinese, the great population, territory and range of climate, the field in a medical point of view is specially interesting. What, however, is predicated as true of China will hold true to a greater or less extent of all Asia, and so in like manner,

we might safely argue from any one European country to all the rest. The question of disease becomes, therefore, of importance in relation to race, so similar and yet so different are the Oriental and Occidental types of disease. The Asiatic customs and social peculiarities, in my opinion, conduce to a higher vitality and a greater freedom from acute and inflammatory affections. On that continent life is more quiet and easy; the Asiatic drinks less stimulating potations, eats simpler food, keeps better hours, marries earlier, takes more care of himself; his passions are more subdued, and his whole life and its actions more under the control of reason and religion. Race thus modifies disease, and *vice versa*. The climate and physical features of a country, and the food and the diseases which depend thereupon and which destroy or impair vitality, are the principal influences directing the development of the permanent characters of a race, and the chief agents consequently by which race is propagated and type constituted. Physiological peculiarities are more acquired than primitively impressed. The acquired and transmitted qualities, with the existing social customs, are amply sufficient factors for the production of every variety or degree of vitality which may distinguish any race. These peculiarities affecting stature, health, and duration of life are more dependent upon the combined influences of food and customs, acting through many ages, than mere climate alone. Simple hygienic precautions which we find efficacious in one country are useful in others, and with proper attention to such rules the deadly effects of climate disappear. The cultivation of temperance in all things, general soberness of life, and all else that would prove useful to us in Europe in enabling us to remain vigorous to resist malignant influences, is of equal value to us in the East. We are in the habit of speaking of a certain invariableness in the type of disease—like causes producing like effects—that disease retains this type in all forms of civilisation, in all climes and all ages. Very few diseases have appeared, very few have disappeared. Some have become graver in certain localities, countries, and civilisations than others, but sporadic cases of

any disease assume the same type as the same disease in its epidemic or endemic form. Although this is undoubtedly true, it is nevertheless also true that many diseases which were either rare or almost unknown have sprung into notoriety and have assumed severer forms, and have added greatly to our mortality bills. Although this invariableness of the type of disease still exists in certain nations and individuals, we are accustomed to speak of the rise of such diseases as small-pox, diphtheria, cholera, and syphilis; of the extension of certain diseases to regions where they were before unknown, as, for example, rubeola into the South Sea Islands; and of the entire disappearance or great diminution of diseases once prevalent, as *e.g.*, ague, leprosy, and small-pox in our own country, by means of drainage, better cultivation of the soil, improved modes of living, discovery of vaccination, &c. And so we find disease bounded by both time and space, developed in some parts of the earth, undeveloped in others; some developed in all parts, some confined exclusively to certain regions and completely absent from others, and all modified by the peculiarities already adverted to. Notwithstanding, however, this amelioration in the symptoms and total abolition of certain diseases, caused by our improved civilisation, this same civilisation, as exhibited in our present modes of life and surroundings—the true causes and explanation of the so-called change of type of which we so often hear—have produced a large train of diseases that either did not exist, or existed only to a very limited extent a century ago, such, *e.g.*, as the various nervous, cardiac, and, generally speaking, acute diseases. It cannot be altogether true, as is sometimes asserted, that these diseases may have existed, but were unknown owing to the imperfect state of medical knowledge and our means of diagnosis at that time. There would seem to be a law of the increase and diminution or total disappearance of certain affections in proportion to the state of civilisation. If this be so, I fear our present review will not prove favourable to our highly civilised and artificial life and its luxuries. The great strides made by European nations, and ourselves in

particular, in trade and international intercourse with the ends of the earth, by virtue of our discoveries and inventions, whatever else may have been done in adding to the sum of human happiness and comfort, have not tended, either among ourselves or nations lower in the scale of civilisation, to longevity or the diminution of disease, but rather the reverse. The immediate effect is naturally that of propagating zymotic and other diseases, and that frequently, too, of a more virulent type than may previously have existed, into countries to which the spirit of commerce, colonisation and civilisation may have led us. The ultimate effect will doubtless be to become better acquainted with the etiology of disease, and so by applying the means of cure or prevention, to stamp out, modify, and limit many of our present well-known diseases. To enable the reader to understand and contrast the conditions of disease in China with those of Europe, it will be necessary to describe as briefly as possible the various matters recognised as influencing or causing disease, such as the sanitary state of the country, the food drink, habits, and social customs of the people; for it is here, I think, where the chief differences will be found to exist, and so by contrast and inference to point out some of the causes of prevalent diseases in the West, and the errors of modern European life. It is in this department of the controllable diseases that our profession ought to take, and I am happy to say is taking, the initiative, as the prime ministers of the health of the nation. It is ours to lay down the law to our patients, the community, and the state; to teach what our medical science and experience have made plain to us, and to show how the various phenomena of disease from these social causes may be modified or altogether avoided. We have, unfortunately, no powers to compel their acceptance but we can appeal to reason, common sense, and self-interest, and I believe we could do more in this direction than we are at present doing. I dismiss the argument that such a course would be opposed to *our* self-interest as not entitled to a moment's consideration, and as quite opposed to the ideal of our profession.

Climate.—From the great extent of China proper, or the eighteen Provinces, stretching from about 20° to 42° of latitude, and 97° to 122° of East longitude, and with a surface of over 500,000 square miles (not to speak of the still greater Chinese Empire, stretching through 77° of longitude, and 40° of latitude), we have every degree of climate and temperature, from the cold of Sweden to the heat of Italy. The country resembles, in the North at least, the climate of the American Atlantic States. In such a vast extent of territory we may expect to find all the diseases to which we are accustomed in Europe, and although my own experience is almost solely derived from Pekin and North China, still I shall make free use of the results and observations of others in Central and Southern China, such as we find in these increasingly valuable Customs' half-yearly medical reports, and those of the various mission hospitals. The country is traversed from East to West by two mighty rivers, both of which occasion frequent and destructive inundations. The Chinese have greatly improved the advantages furnished them by their rivers for irrigation and navigation by digging canals. The Himalaya mountains may be said to divide Asia into North and South portions totally different from each other. China and North-Eastern Asia generally resemble more the northern part, and from its elevated position, bordering on snowy mountains, and the regions of intense cold, China has a pretty rigorous climate, especially in the northern half. The monsoons of the tropics are felt but slightly, except in the extreme South. On the whole the climate may be said to be salubrious, invigorating, and favourable to longevity, without the great rigour of more northern regions and the enervating influences of the more southern. The average temperature of the whole empire is lower than that of any other country in the same latitude. More than the half is mountainous, chiefly in the South and West—the great plains are in the East and N.E. Cultivation is carried to a great extent everywhere—there is no meadow or pasture land. It is the most fertile of all the countries of Asia, though it owes much of its productiveness to its inhabitants,

So much for a few general preliminary remarks on the geography and climate of the country as a whole. Other points of more interest medically will be referred to in the course of the paper.

Sanitary Condition, Sewage, Drainage, and Typhoid Fever.—China may be said, in a word, to be totally destitute of sanitary science. Take the following as a specimen of the condition of sanitation at Canton. Dr Wang is speaking of typhoid fever, and he says he saw only two cases during a period of more than 10 years. He has seen many cases of remittent and intermittent fevers, but never one of typhoid. It may therefore be safely affirmed that this disease is not at all prevalent, although we should expect a different state of things, as the causes that are usually supposed to produce typhoid fever are in full operation. In Canton large numbers of the natives are daily using water and inhaling air charged with the impurities of human excreta, apparently with utter impunity. River water is greatly used, and that used by the boat population along the different jetties is extremely filthy, and must be largely contaminated with human and other impurities. They do not suffer from diarrhoea and fever more than others, but rather less. The filthiness of the creeks which ramify into different parts of the city are much worse than this. He gives one illustration of a creek near the foreign settlement which has been under his observation for some years. It is narrow, crowded with boats—innumerable houses on each side—the alvine dejections and other impurities of thousands of inhabitants along it are daily discharged into the stream, yet the water, too dirty even for washing, is daily used for culinary purposes without being filtered, or is precipitated with alum as is done elsewhere. Here we should expect the prevalence of such diseases as typhoid and diarrhoea among the inhabitants occurring often enough to excite attention, but their very impunity is one of the reasons for their continuing to use the water. He adds, a detailed examination of this creek and the disgusting habits of the inhabitants would almost unsettle one's ideas of the connection between typhoid fever

and polluted water. I can myself corroborate every word of this as witnessed at Tientsin, in the North, where a similar condition of things exists. Or take another witness, Dr Reid, at Hankow, in Central China, on the Great River Yangtse. Speaking of the same fevers of the intermittent and remittent type which are so prevalent in China, the latter especially, he says—"The failure to discover any type of exanthematous fever is scarcely what might have been anticipated, knowing the filthy condition of the houses and streets, the density of the population, and the poverty in many quarters of the native city. It might have been presumed that the haunts of enteric fever at all events would have come to light, seeing that the products whence its organisms are supposed to be derived and nourished abound in many directions. This will be readily acknowledged if allusion be made to two of the more active and constant sources of impurity—viz., the emanations from the latrines and drains. The latrines are of course numerous—constructed without regard to cleanliness, and nothing is used to interfere with the results of decomposition. Their contents are allowed to accumulate for three or four weeks until the large, deep open troughs underneath are filled, and they are then disposed of to the farmer or gardener and carried to the jetties in uncovered buckets, often during the day. While the process of emptying the troughs is going on the neighbourhood is saturated with odours of the most intense description, and which defy the tolerance of even well-blunted olfactories. The boys in an adjoining school, who never smelt fresh air, were obliged to have their nostrils stopped or compressed during successive days to exclude the stench. Notwithstanding the apparent undesirable character of the locality, in some cases private dwellings and even restaurants doing a thriving business, may be seen attached to the latrines, and only separated by a wooden partition insufficient to oppose the entrance of polluted air. The drains are blocked up with accumulations of mud and debris. From the want of means to obviate the regurgitation of gases from the cesspools of the streets, connected

with the courtyard or interior of the houses, these drains must contribute largely towards increasing the impurity of the houses. In the poorer quarters the open ditches are half filled with decomposing refuse and garbage, and exposing their nauseous contents close by the doors or even under the floors of the houses." He further adds—"These various prolific sources for the development of organic germs have been specially referred to in connection with the absence of enteric fever, because it may happen that in time evidence may be collected to prove or contradict an important theory in relation to this fever, that where malaria exists there is neutralisation or tolerance of the enteric poison." At Chefoo, Dr Meyers reports "that the water is decidedly unsatisfactory, full of organisms, owing to the total want of circumscribed cemeteries and the water percolating through the soil. The surroundings of the wells, moreover, are filthy, combined with dirty buckets and dirty water-carriers. Persons long resident here appear to suffer but little inconvenience from this state of affairs. There is no drainage, but at the same time I must confess that this appears to exercise no injurious influence over the sanitary state. There is total absence of all those deleterious effects which might be justly supposed to follow so dangerous a disregard of sanitary laws." Amoy, according to Drs Müller and Manson, is superlatively dirty, streets narrow, irregular, and filthy in the extreme, and redolent of every impurity. Pigs and dogs are the sole representatives of the elaborate machinery of sanitation in use in European towns, and a scientific sanitarian, with only home experience to guide him, would confidently predict the origin of epidemics and death. Yet the Chinese manage to live and thrive where he would hardly dare lodge his pigs. There is no typhus, no typhoid, or other disease, considered the inevitable consequence of defective sanitation, although Amoy, and indeed all Chinese towns, are full of typical typhus dens. Luckily filth, overcrowding, and bad food are not the only factors necessary for the manufacture of a typhus epidemic. Were they so we should live here (China) in perpetual dread. And these are

not the only fevers whose absence we have remarked, with the exception of smallpox, we have met with no representative of the class of continued fevers which claims so large a number of victims in Europe. No case has been met with in either Amoy or Formosa of scarlet fever, measles, relapsing fever, or diphtheria. The petechial fevers, with the exception mentioned, are entirely wanting. Considering this and reflecting on the rarity of the atheromatous and fatty degeneration, with the numerous dangerous diseases they entail, we may be at a loss to account for the mortality. If we think, however, of smallpox mortality, 1 in 3 from the unmodified form, part of the difficulty vanishes, and then add malarial diseases, remittent fever, ague, diseases of the spleen and liver, anæmia and its consequences, and to these add cholera and leprosy, and we have sufficient causes for a considerable mortality. Another writes (Mr Porter Smith, of Hankow)—“Chinese utter disregard of sanitary science among an otherwise highly civilised and accomplished race is one of the worst facts. They take kindly to the purple, but never to the fine linen. The cleanest and whitest garment next the skin would be a strange perversion of the order of wearing their apparel, but nevertheless they possess public baths.”

Dr Somerville, of Foochow, a graduate of our University, says:—“I have to add my testimony as to the total disregard of anything like sanitary arrangements. Dirt of all kinds finds its way through the non-dovetailed and shrunken planks of the floor, and when a house is burnt or blown down, the foundation is seen to be a mass of filth in a decomposing state. There is nothing like drainage, and the traffic in night soil, the formation of manure pits, and the watering of fields with liquid ordure obtain here as elsewhere. In short, we have all the generally recognised factors of zymotic disease, with a high temperature to favour the fermentative and putrefactive processes. Yet we enjoy a high standard of health, and there has been no epidemic affecting foreigners at this port for at least eleven years.” He was led to make these remarks by the remarkable fact, that

four cases of typhoid fever occurred during 1872-73. There had been no case at the anchorage for three years, and in eleven years' practice there he had seen only seven or eight cases altogether before the present series. There was no evidence that the fever had been communicated from one patient to another, and he sets down the form therefore as sporadic. He adds, "We have a mass of evidence favouring the view that the poison of typhoid is communicated through contaminated water, and I think that cases like the present, where no such mode of diffusion is probable, are deserving of record." And he further adds, very cautiously, as if he felt misgivings about the received connection between contagion and the communication of typhoid, as explaining the whole case: "I think the purpose of these reports (Customs Half-Yearly Medical Reports) for the present is best served by collecting material for future use. I, therefore, content myself with stating these facts, and refrain from generalising from them, more especially as the subject of sanitation is at this moment engaging the attention of our best authorities in all parts of the world."

The foregoing remarks hold good regarding all large native cities. Drains for surface water are general in Chinese towns, but, for the most part, they have been allowed to get choked up and broken down, and then they become the receptacles, as open ditches, of the city garbage and filth, and become a terrible nuisance. The condition of the capital resembles, in many respects, other Chinese cities, but in many important particulars it is quite different. In regard to drains, Peking stands unrivalled among the cities of the world as far as their age, extent, former admirable adaptation and present ruinous condition are concerned. We have two large sewers on all the main streets, with branches to all the lanes. They drain into the city moat, and these into the Peiho, or canal leading thereto. Those that are free in parts of their course are sure, after heavy rains, to open somewhere into the streets, deluging them with putrid mud and filth, entering the drain at a distant point, and then again repeating the above act. By and bye the mud dries,

and is used for repairing the roads. With all our filth and dirt there is a wonderful immunity, even from fevers. The police, who water our streets from these cesspools, and utilise the dirty water and urine collected in the houses and shops during the day, are among the most robust and healthy of our population, provided they are not, at the same time, opium smokers. The beggars, a very numerous class, sleep in the streets nearly all the year round, congregate in the very centres of pollution, and even, to some extent, contest with dogs, priority of claim to the refuse of the dunghill, not only survive, but flourish, and most of them look fat and sleek. The mouths of our lanes, waste places, and tumble-down, or unoccupied houses and shops are our most polluted regions, and the common place of resort of the neighbourhood for males. The reason assigned for the innocuousness of this sad condition of things in China are, among others, the following:—We have our prevailing winds in most parts of China, which act as diluents, and prevent the too great accumulation of noxious effluvia, ready to ripen into activity. There is also the sandy, absorbent nature of our soil, in the North at all events. The apparently objectionable and disagreeable plan of watering the streets from the foul fluids of the drains and domestic urinals carries good in it. These collections of decaying organic matter are moved and prevented from accumulating in too large quantities, and when thrown on the streets the greater part of it is absorbed by the dry soil. The operation is always performed after sundown, to prevent too much evaporation. I am unable to say whether this is from economical or sanitary considerations, most probably the former. After sunrise the streets are nearly as dry as before. Our weather is very dry in the North, frequently seven or eight months without either rain or snow. In summer, after heavy drenching rains of several inches, the dust will be plentiful on the third day, so dry and absorbent is the soil. Another reason, and this is doubtless the chief one, is the high value of human manure, and the assiduity therefore with which it is collected for

agricultural purposes. Large numbers of the people in this way obtain a living. Its high value and the great poverty of the people are our safeguards. It is carried outside the city walls, and is dried and caked, or pulverised. The dung of the herbivorous domestic animals is dried for argol, and used as fuel. Human excrement so prepared is the most expensive of manures. Much that is recommended at home in the way of ventilation, water supply, and disinfection of privies is in China rendered unnecessary. All the advantages claimed for the dry earth system are gained here free of expense to the individual or public. The industrious and frugal habits of the Chinese, and even their very poverty, thus work to their advantage (all sanitary measures more than repay their cost), for it compels them to utilise all excrementitious matter. Every particle of every kind of manure, besides rags, paper, etc., are collected and preserved with the greatest care. The private privies, which are all out of doors, are visited daily by these manure collectors, and so great is the demand for it, that no payment is made to these scavengers. Foreigners pay a trifle monthly to guarantee respectability, cleanliness, and regularity on the part of the collector. The healthiness of our foreign settlements in China is, in a great measure, owing to the absence of water closets in the dwelling-houses, which, in Europe, are a fruitful source of disease. Gases, such as sulphuretted and carbonetted hydrogen, are not so injurious to health when given off in the open air, as when escaping from sewers. China is, par excellence, the country of bad smells, and yet, as we have seen, the people do not seem to suffer from them, but, on the contrary, rather like them.

The removal of excreta and the disposal of sewer water is the sanitary problem of the day in this country. Our sewers allow transference of gases and organic molecules from house to house and place to place; occasionally, by bursting, leakage, or absorption, the ground is contaminated, and the water supply is constantly in danger of being poisoned and contaminated; and all these dangers are greater from being concealed and being beyond individual control. Fevers and

cholera are thus possibly propagated from house to house. In China we are entirely free from this danger. It would seem advisable that our water closets should be in an out-building or projection from the main house, and should be placed at the top of the house, with a tube passing to the outer air. When placed in the basement the closet air is certain to be drawn into the house. For use in the bath room, a solution of sulphate of iron 4 parts, carbolic acid, 1 part to 30 parts of water, has been recommended as a good disinfectant by Dr Jamieson. Each time it is used two ounces of the solution should be poured in. By this means the air would be rendered perfectly pure, or at most faintly impregnated with carbolic acid. The great expense attending the use even of the cheapest disinfectant would seem to preclude the use of this method for the large sewers of our cities. This, however, is denied, and it is asserted that certain antiseptic agents, even in a highly diluted form, would gain the object in view. It does not seem impossible in large manufacturing towns to ventilate the sewers by connecting them with factory chimneys. These same chimneys, as well, probably, as those of ordinary houses, in seasons of epidemics at least, or by spray-producing machines or other mechanical appliances, might disinfect closes, houses, and whole localities and towns.

Houses.—Let me now say a few words about *houses* in this connection. In China they are, with few exceptions, of only *one* storey. The streets are narrow; those in the capital are an exception to this rule. These narrow streets serve the purpose of warding off the great heat of summer—mat awnings being frequently stretched across them; in winter they protect equally from cold winds and increase the general warmth and comfort. The houses are, as a rule, arranged in courts, the principal ones invariably facing the south, by which they get the cool winds in summer and the warmth of the sun's rays in winter. The houses of the better classes of officials, temples, &c., are lofty and handsome. The arrangements of the houses, required by their style of architecture and family relations, necessitate numer-

ous courts, and thus cover a considerable area. No houses infringe on the privacy of others. They are usually surrounded by verandahs, rendered necessary by the great heat of summer. The better class are built of substantial brick, the poorer ones, and especially in the country, with sun-dried bricks. The roofs are massive, being covered with closely-overlapping tiles, with a thick layer of mud and lime, and with wood, slate, or straw underneath, which effectually keeps out the cold in winter and the heat in summer. Ventilation is perfect in summer, but rather defective in winter. The poor people like to have low ceilings to lessen the space to be heated. The houses usually consist of two brick gables, with the other two sides filled in with windows and doors. With the exception of the introduction of our chimneys and wooden floors, foreign changes have not been improvements on the best sort of native houses. Our houses, all under one roof and of several storeys, with the exception of economy, perhaps, in heating, are liable to serious objections in the matter of fresh air, free ventilation, and, if need be, isolation. The better class of houses are usually raised several feet above the ground, and the surrounding courtyards being thus lower, afford excellent drainage in rainy weather. In China there are no sunk flats or cellars. The foundations are usually of stone, and the lower parts of the corners of the gables and cornices are also of this material; all the rest is of brick. In the country the sun-dried brick houses have almost invariably a band of slate, wood, or more frequently straw, running round the house, to prevent the damp ascending and mouldering the bricks. The plan proposed of having a chamber in the foundations of the houses in this country communicating with the chimneys from the lower storey, and where they would begin, is, I think, strongly advisable, and would thus ensure that all foul gases and diseased germs arising from the soil would be carried out of the house. To prevent the ascent of air from the soil, the basement should be paved or concrete used, or, as lately recommended by Dr Richardson, the houses should be raised on arches. Chinese houses and courtyards, of the better class at least, are floored

with brick, which prevents emanations from rising, the water in the courts from being absorbed to any great extent, and tends greatly towards draining off the rain water. From the condition of the great bulk of the houses of the lower classes both in town and country—the houses having earth floors and a damp subsoil under or around them—we should, of course, expect rheumatism and neuralgia to be very prevalent. And so they are. Among the Mongols, living in tents, rheumatism is the most commonly met with affection. The cases, however, are entirely muscular, the acute variety being rarely heard of, and one practitioner states never met with, although frequent enquiry was made amongst the Chinese sufferers. The causes of chronic rheumatism are not far to seek in a population lowered by malaria, bad diet, damp dwellings, and especially great and sudden changes of temperature. The absence of the acute form is attributed to the rapid elimination through the skin, and likewise also to the more sluggish, inactive disposition of the Chinese, rendering the system less liable to be roused to produce acute symptoms. Another professional brother reports at his port “rheumatism takes almost invariably the chronic form, caused by the damp and undrained situation of native houses.” Dr Smith, of Hankow, thinks the vegetable diet, poverty of nitrogen in rice, and scarcity of red flesh tend to its development. At Souchwang, Dr Watson reports —“The people suffered from rheumatism and ague after the heavy rains, but in spite of insufficient food and the unhealthy character of the country, no very great increase of mortality among natives took place during the summer.”

The warming of houses is another point of importance. Chinese houses have no chimneys. In the North of China, where the winter is long and severe, the houses are provided with kangs, or earthen platforms, covered with large square bricks, having flues running under them through which the heated air and smoke, if any (for they burn anthracite coal), passes, and after traversing the kang finds an exit in front into the room, and uniting with the heat of the fire, increases the heat of the room. Among the upper classes these bed

platforms are sometimes heated from the outside, which is a decidedly preferable plan. The floors, too, are sometimes heated in this way, the flues being arranged under them in the same way and heated from without. This union of kitchen, fireplace, and bed is a matter of great moment to the poor and the delicate, whether young or old, who suffer greatly from insufficient clothing and improperly or imperfectly heated houses. Among the very poor it dispenses with much bedclothing. The bedclothing of such consists generally of their every-day wearing apparel loosely laid over them at night, with the addition of a cotton mattress. They sleep with the head to the outside of the kang, the reason assigned being that in this position it avoids the danger of the clothes catching fire, and puts the head—the heavenly part of man—in a freer and more honourable position. With the head to the wall the impure air and feeling of restriction and confinement would prove injurious.

We have at Pekin several beggars' houses or small inns and an Imperial House of Refuge so heated in the winter season. The latter is gratuitous, and a very small pittance, about a farthing for a night's lodging, is demanded by the keepers of the former. The windows are well papered and oiled. In the centre is a large fireplace for warming the room and the beggars, and supplying them with hot water. The beggars squat or lie down on the stove bed-places, with simply a mat stretched upon it, and they without any bedclothes, in fact generally without any clothes at all. I have seen as many as fifty, each bolstering up his neighbour, on such a kang. The temperature is kept about 70°. The air of these rooms is, of course, extremely disgusting, but they are tolerably clean. During the day the beggars, who for the most part are fat and well-looking, pursue their profession on the streets of the city, and at night again return to their heated ovens. Although the atmosphere in these places is loathsome, it is still a matter of great consideration that they are able to obtain lodging in a warm room for the night when the thermometer is often near zero, especially when they have no blanket or coverlet to protect themselves.

In some places a coverlet suspended from the roof is let down upon them at night. The mortality in the Imperial House of Refuge is very great. In the latter place the beggars are supplied with two meals of millet per day.

From this description you will observe that the Chinese houses and bed-places in the North, at least, closely resemble the Roman hypocaust, the floors being warmed by pipes and smoke flues under them. A plan similar to this might very beneficially be introduced into our own country in one-storey houses or the basement floors of others. In winter these kang's would prove eminently serviceable for the very young and delicate of whatever age among the poorest classes who cannot afford either sufficient clothing or bedding. They might be so arranged that our bitumenous coal would prove no drawback, and I feel certain that our great mortality among certain classes from bronchitis, pneumonia, pleurisy, congestion of the lungs, &c., would be greatly lessened. The pawnshop, and afterwards the ginshop, are too often the receptacles of the clothing charitably dispensed to the poor in winter. The frugal and economic Chinese, if placed in our position here, might even consider the propriety and feasibility of utilising the waste steam of our great factories for heating the dwellings of the neighbouring poor. The American cylinder stoves, now so universally used by foreigners in North China, are well adapted for heating purposes. They heat thoroughly, and are greatly to be preferred to the extravagant and poorly heating English fireplace. The water evaporating apparatus provides against headache, &c., from overdryness of the atmosphere. Chinese houses are on the whole well lighted, two sides being almost always composed of doors and windows. The light is well diffused, and there is no glare—oyster shells in the South, and Corean or other paper in the North, being the article with which the windows are glazed. Glass is being extensively introduced. An important factor in the health of the Chinese is their being so much in the open air. The male portion of the people, even those of our own profession, included along with the barbers and chiropodists, carry on their

trades and callings on the public streets. They live much in the streets and in the open air—the whole side of their shops being freely exposed. In this way many of the evils and dangers of our crowded workshops, arising from impure air, from whatever cause, are avoided.

Water Supply.—Another topic demanding a passing notice, as playing a most important part in sanitation and causation of disease is the *water supply*. The water supply in China is derived chiefly from rivers and wells. The water obtained from rivers is manipulated in various ways, passed through filters, allowed to settle, and the organic matter is precipitated by chemical agents, alum being in most common use. But whatever be the water, and wheresoever the supply, it is invariably boiled by the Chinese. The Chinese, as a rule, do not drink cold water. We have already pointed out how strongly it is contaminated with filth and garbage in the great centres of population on the great rivers, and that the supply is almost invariably drawn from the public places of resort. In Pekin the supply is partly from wells and partly from springs at the Summer Palace Gardens, the water being led into the city, a distance of eight or more miles, in a canal. It runsthrough lakes, and ultimately through the city moat. Our ice supply in winter is derived from this quarter. The water is soft and sweet, and is equal to our Loch Katrine water. The wells in the city are numerous, and placed at short distances, generally on alternate sides of the streets, from which the neighbouring householders, who have not wells on their own compounds—and nearly all large compounds have one or more—and animals are plentifully supplied. The refuse water at these wells is used for watering the streets. Wells are to be found along all the roads of China at every short distance to supply the wants of travellers and the domestic animals. The wells are usually farmed out. The water-carriers have their legs bandaged from the knee downwards, with the object of strengthening and supporting their calves, and so aiding them in following out their occupation. The device is effective against varicose veins, or as they express it, “the falling down of the belly

of the legs." Varicose veins are very uncommon among the Chinese. Ignorant of the true circulation, they suppose them to be tendinous tumours, and so express them. May not the practice of tight garter-tying, among the fair sex especially, obstructing the circulation, cause this condition of things, which is pretty common in the West? The Chinese tie their trousers and stockings together at the ankle without any bad results, and with the additional advantage of keeping in the heat and keeping out the cold. From the universal prevalence of water and these wells, I need hardly say that rabies is extremely or comparatively rare, considering the vast number of dogs, each householder possessing one or more. Dogs are never muzzled. Gravel and calculus, too, are among the rarest of affections in China. Only in Canton has calculus been found at all, and there it seems to exist to a considerable extent. The reason has not yet been explained, for the same conditions, river water, boiled and used in cooking or in infusion of tea, are universal over China. In Canton, from 1854 to the end of 1875, 432 cases of stone were operated upon at the Mission Hospital there. The total weight of stone removed was 408 ounces, or $25\frac{1}{2}$ lbs. The gouty diathesis appears to have little to do with the prevalence of stone at Canton, as gout is not met with among the native population. And not only is stone absent, but all other urinary or renal diseases are comparatively rare, certainly much less common than in Europe. Only one case of diabetes was seen at Hankow in five years out of thousands of patients. This immunity from renal disease is attributed to some extent to opium. But opium smoking, although very prevalent, and the consumption of the drug increasing and extending, can only explain this freedom from renal and other diseases to a limited extent. We shall point out further on some other and more evident reasons. The original badness and filthiness of the water at the open ports on great rivers and adjoining large native towns—and, as a rule, the foreign concessions are situated below the native cities—has frequently been made the pretext among our countrymen out there for indulging in vari-

ous medicated waters. The seductive cocktail and brandy and soda, &c., &c., in a warm climate, and with high animal living, have had much to do with the high foreign death-rate—liver disease, aneurism, heart disease, heat apoplexy, &c. of which we hear from time to time. There is no doubt that the best treatment to which to subject all water, especially where there is any suspicion, is to boil it, and by so doing to destroy all the living organisms. If we must swallow myriads of insects in almost every drop of water, it is as well that they should be cooked. It has been established that living protoplasm is certainly destroyed by sudden exposure to a high temperature, say 140 F. when in the moist state. It is only for a very few minutes that contagious matter can stand the temperature of boiling point—its destruction is merely a question of sustained boiling. And it cannot be too distinctly understood that dangerous qualities of water are not obviated by the addition of wine or spirits. I certainly think that we, as a people, and still more our American brethren, drink too much cold water. The Chinese, who have seen foreigners drink down large tumblerfuls of water at meals, attribute it to the necessity of putting out the fire in the stomach caused by our beef-eating propensities. The Chinese have water freely exposed in their earthenware utensils or *kangs*. They tell us never to drink water on which the sun has shone, no matter how thirsty, for besides that it hath at that time pernicious qualities, it is often full of the spawn or ova of innumerable insects. Simple hot water and tea are the common every-day beverages of the Chinese. The universal use of hot water as a beverage is remarkable. Our own old writers on health have also recommended as an immediate remedy in flatulence and palpitation of the heart, and indigestion generally, the use of hot water and the recumbent position. "Cold water is an enemy to concoctions, and the parent of crudities." And here, as in other matters, it would be well always to remember that before the process of digestion can commence, the matters introduced into the stomach must take the temperature of that organ. And the experience of

not a few will doubtless corroborate the Chinese practice, that when overheated, physically fatigued, or mentally exhausted, a glass of hot water will refresh them more than wine; the latter exasperates the evil, the former mitigates it by its softness and coolness. It might probably be supposed that owing to this extreme care, observed by all classes regarding water, intestinal worms would be very infrequent in China. The reverse, I am sorry to say, is the case. The tape and round worms are very common—male-fern in the former, and santonine lozenges in the latter, have been most successful remedies. Numerous patients have been relieved of several tens of feet of the one, and hundreds of the others. They are supposed to cause toothache, necrosis, consumption, &c.; and the native treatment is always, of course, directed against this supposed cause. Both the *taenia* and *lumbrici* are supposed to be caused by eating macaroni or vermicelli, and the native faculty strictly forbids the use of these substances, which seem in the system to be converted into worms. The people everywhere indulge in pork, raw vegetables, unripe and uncooked fruit, and, I presume, the animals are carried into the system through these channels. The *taenia solium*, which is so prevalent, is certainly owing to the consumption of pork, imperfectly cooked or quite raw; for we know that the *cysticercus cellulosa*, the embryonic state of the *taenia*, exists in the pig.

Baths.—A word as to *Baths*. Numerous public baths exist in all large Chinese towns. They are known during the day by a red lantern, lighted at night, raised on a lofty pole. The water is usually changed once daily. The utmost care is exercised in admitting to the baths. The floors and the baths themselves are heated from underneath by stoves. Private baths in wooden tubs may be had to order. An ordinary bath costs 1d, and during the last month of the year about 3d. Cold bathing is never resorted to, and it is to this use of warm water, to their temperate habits, and partly also to their non-use of flannel, that we must attribute the absence of prickly heat (*lichen tropicus*) in summer,

Europeans are greatly afflicted by this troublesome eruption, the sensibility of the skin being greatly increased by stimulants. The looser garments of the Chinese may also operate beneficially. The Chinese are not much given to baths. A little water satisfies them; for their ablutions they are content with just as much scalding water as will cover the bottom of a flat brass basin. The greasy commissioner Yeh, on his way as a prisoner to Calcutta, indulged in a bath, truly *a la Chinoise*, when he called for a teacupful of warm water. They never wash their hands or face with cold water, but use a loosely woven cotton handkerchief or cloth, wrung out of hot water, with which they wipe their hands and face in the morning, and also after meals in good families. The Chinese dread the effects of water, especially cold water. It would be cruel to think of disarming the beggars of their foul coat by means of a hot bath, because they would certainly die from inability to resist the cold. The thievish air would gain admittance at every pore. As practitioners, we must eschew water dressings, baths, fomentations *et hoc genus omne*, if we wish to remain in attendance and inspire respect and confidence. The people abhor not only the touch, but the taste of cold water. The Chinese suppose Europeans are obliged to bathe daily on account of the insupportably bad odours which are emitted from their cuticles. Hot or warm baths, especially in tropical countries, are by far the safest and really the most cooling in summer. The strong reaction after a cold bath makes the feeling of heat tenfold worse. There are various diseases, especially of the liver, where cold bathing might prove dangerous, as tending to congestion of internal viscera, and which are therefore contra-indicated.

Beverages. — Speaking of the water supply, leads me naturally to speak of the *beverages* or drinks of the Chinese, and here also there are some useful lessons for our guidance to be learned. The Chinese are a sober, temperate people. Although China has much fermented liquor, she has neither beer from malt, nor wine from grapes. She is emphatically a sober country; though

wine is cheap, and there is no tax upon it, and no restriction in its sale or manufacture, and though nearly all classes use it, few comparatively drink to excess. That which is the common disfigurement of life in our cities and towns, is a rare sight in China, even in her seaports. The rice wine, not unlike our sherry or Cape, is served up hot in small cups—the common spirit or samshoo, distilled usually from millet, is never heated. Taking our drinks hot, besides being more natural and rendering them easy and ready of absorption, we know what we are doing, not like iced wine which people are induced to drink, deprived of the advantage of knowing when they have got enough. It is indeed a very rare thing to see a drunk Chinaman, and a drunk woman would be a wonder. During a residence of twelve years in the country I have not seen five cases of intoxication. And yet the Chinese, apparently so abstemious, consume no inconsiderable quantity of spirits. The great consumption of spirits in Western countries is often offered as an apology for opium-smoking in China. There would be force in this argument if China abstained from intoxicants, for in addition to her opium and spirits, she has also her stimulating tea, betel nut, and tobacco. But although a little spirits is usually consumed after meals nearly all over China, the very badness and want of fragrance of the native spirit, which contains much fusel oil, has kept the people sober and temperate. In no country perhaps is wine, of a decidedly intoxicating nature, so generally and yet so moderately partaken of as in China. I have seen not a few cases of dyspepsia and stricture of the œsophagus caused by addiction to spirits, the latter cases of course uniformly fatal in the long run. The only treatment which the Chinese have devised for this formidable complaint is bread saturated with the blood of decapitated criminals. The absence of renal and hepatic disease is referred in part to their comparatively temperate habits. With tropical heat in summer, the variableness of the weather, particularly in spring and autumn in most places, the poverty of the people, and their general exposure to the inclemencies of the seasons, it

is remarkable to find hepatic disease so rare. Great care in preserving from chills, an object easily obtained, as we shall see, by the nature of the Chinese clothing, along with proper diet and temperate habits, are the chief prophylactic means against "liver." We find the Chinese, too, almost absolutely free from diseases of the heart and blood vessels—fatty degeneration, for example, which is the usual form of heart disease induced by alcohol. We have noted the absence of serious changes in the liver and kidneys, as, for example, diabetes and Bright's disease. Delirium tremens is also unknown in China.

And here allow me to make a very few observations on *aneurism*, *heat apoplexy*, and *syphilis* in this connection. *Aneurism*, as we all know, is of increasing frequency in England. During the last 20 years the total number of deaths have been more than doubled, and they have been wholly confined to males above 20 years of age. There has been no increase among females or young people. Heart disease and aneurisms are now among the most appallingly frequent diseases of early manhood. The profession has been greatly exercised in the East to discover causes of degeneracy among the Europeans in the prime of life. French surgeons ascribe it to changes caused by malaria. As a cause leading to degeneration, syphilis, by a pretty common consensus of opinion, occupies a foremost place. Rheumatism and alcoholism are said to produce the same arterial inflammatory changes as syphilis. With the Chinese, and rice-eating people generally, aneurism is the least common affection. In Shanghai, our principal port in China, the ratio of deaths from disease of the heart and great vessels, to the number of deaths from all causes, is higher than in Europe. In 1873 there were 7 deaths at Shanghai, 7 in 6 months of '71 and '72, 5 in '72, 16 in 3 years. No case has of late years, at any rate, been seen at the Chinese hospital in Shanghai. The simple habits of living of the Chinese, their phlegmatic and unexcitable natures, probably give them immunity from this disease.

Our present high-pressure European life, with its mental

overwork and incessant worry, intensified by other influences, nearly if not quite as potent, such as excessive use of alcohol, inattention to diet, pure air, and by animal excesses, must have much to do, I should think, with heart disease and aneurism, not to speak of such other affections as paralysis, dementia, diabetes, and renal disturbance. This overwork and over-anxiety, by the very exhaustion of the body which they cause, call for stimulants, and soon other diseases set in which too frequently place the patient beyond medical skill. Physical overwork is also characteristic of modern life. Excessive physical exertion is quite unnecessary to maintain or promote health. The 1000 miles in 1000 hours sort of exercise; numerous of our games and exercises, such as football, boxing, rowing, leaping, running, &c., indulged in to an extreme degree—and I fear such is only too truly the case—are well adapted to increase over-action of the heart, and consequently subject the individuals to frequent and sudden congestion of the lungs and other vascular organs; to aneurism, at one time called post-boy's malady, hypertrophy of the heart, &c. When extra force is put forth it is too frequently at the expense of the organism itself. We have also a combination of the mental and physical, so well brought out in Dr Richardson's work on the diseases of modern life, as exemplified in long journeys to and from business—our railways facilitating living out of town away from office and places of business. There is the rushing to catch a train morning and evening, a mode of life possessing many elements of danger and many annoyances; and in this way both the nervous and vascular systems suffer. To the former belong unnecessary anxiety, restlessness, timidity, and sleeplessness, irritability of temper, recurring fits of exhaustion; to the latter irregularity of the circulation, irritability of the heart, cold extremities, imperfect secretions, want of muscular power—a host of circumstances connected with railway travelling which contribute to injure and shorten life and comfort. I might have referred here to other causes all tending in the same direction, such as political excitement, excitement of war, religious revivals, con-

tests of creeds, speculations of philosophy, publication of daily newspapers, the flashings of the electric telegraph, and other such like influences, from all of which disturbing and disease-influencing and disease-producing causes in China we are fortunately completely free.

Some of our Chinese maxims bearing upon the heart and its affections are the following:—Do not employ yourself in any thoughts and designs but what lead to virtue; keep peace in the heart (anger and sorrow are supposed to damage the internal viscera, injuring the liver, and thereby preventing the secretion of the active principle of the blood and the source of the vital spirits—injuring the lungs, and thereby causing hæmoptysis, and finally consumption, and paralysing the œsophagus and stomach); besides, reflect often upon the happiness of your condition—know the value of health, and study to preserve it.

I have referred to anger, and here, in passing, I would remark that the Chinese themselves trace almost all their diseases to anger or to wine: The former stands first. That man is indeed rich in physical power who can afford to be angry. We hear of and often see people *red* or *white* with rage, and as a result of this, when long-continued, intermittency of the heart, paralysis, apoplexy, congestion of the liver must ensue.

Regarding *heat apoplexy*, in 1872 no fewer than ten deaths occurred at Shanghai. Intemperance is recognised by all as a powerfully predisposing cause. In regard to these cases, it was found on enquiry that in nearly every instance these patients indulged freely in alcoholic liquors. The dangerous effects of exposure are controllable by proper precautions and by prudence in eating and drinking. Insolation is quite unknown among the natives, even among labouring classes, who go through severe physical exertion, and often with their heads quite unprotected from the sun.

A word or two on *syphilis* in this connection may not be inappropriate—"that one moral and physical blot of our civilisation, tinging many diseases, if not causing some, pro-

ducing many forms of cachectic feebleness and impaired physical build, probably the most controllable, but at the same time the most prolific of injury." Our profession recognises this disease as predisposing to arterial degeneration—the so-called syphilitic arteritis. The diseases of the heart and blood vessels among our troops in China and Japan have been traced to this cause. There is in the army an excessive mortality and invaliding from aneurismal disease, said to be developed in China. The virus of syphilis is said to be more violent and severe there than the same disease when contracted in Europe. There may be other reasons in diet, intemperance, and exposure, to account for this. Syphilis is more frequently met with in private European practice in the East than in England. But I should think that diseases resulting from vicious and licentious habits are not so violent in their effects in China as in countries where the use of animal food and higher living render the system more susceptible to the noxious consequences of the virus. I have seen hundreds of cases of patients with syphilis and enthetic disease generally at Peking, and bad though they undoubtedly were, I suppose they were not worse than what may be seen here among our lowest classes where cleanliness is not next to godliness. I have always found the Chinese cases most amenable to treatment. I have come across not a few cases of cancer of the penis resulting from unclean connexion. There is no doubt that cases of phymosis, on account of the irritation set up by the discharges and secretions inside the prepuce, predispose to epithelial cancer of the penis. All the cases I saw, and in most of which I operated, had this origin. Strange to say, one of my patients was a Mohammedan who had not been circumcised in youth. It was interesting to me, as tending to confirm the view advocated by Travers, that the Jews (and he might have added the Mohammedans also) know nothing of this disease. This immunity is attributed to the beneficial results of circumcision. And in these days when so much is spoken and written about our Contagious Diseases Acts, it might be well to have recourse to the alternative of circum-

cision. I feel sure it would be attended with the best results and would diminish very largely all the various diseases of the genital organs, and would abolish altogether phymosis, paraphymosis, and cancer of that organ.

After this long digression, I return to the question of beverages. Wherever European civilisation has gone, intemperance among the native races has followed. We have invariably impressed them with our bad example. It is so in China to a small extent already at the ports, and we know that the Hindoos, formerly the most temperate of races, and in whose ordinary food spirits form no part, if indeed they are not forbidden by their religion, are rapidly becoming addicted to drink. Those who are best able to judge condemn alcohol as a preventive against cold, and equally so against heat. The heat of the tropics is not so well borne where spirits are indulged in, and they certainly predispose to insolation. Warm tea in the tropics is admitted by all to be the best beverage, and the experience of several hundred millions in China confirms this opinion. Spirits are no necessity in health, and as now used by mankind they are infinitely more powerful for evil than good, and a clear view of their effects must surely lead to a lessening of their excessive use which now prevails in this country especially. In the words of the late Dr Parkes—"There is no question that more disease is directly and indirectly produced by drunkenness than by any other cause, and that the moral as well as the physical evils proceeding from it are beyond all reckoning, and yet the attempts of the Legislature to set some bounds to intemperance have been and are opposed with a bitterness which could only be justified if the degradation and not the improvement of mankind was desired." As a matter of public health, it is highly important that our profession should throw its great influence into the scale of moderation.

Tea and iced beverages, indulged in by the Chinese in summer, such as acidified apricot or rice *congè* or soup, are certainly preferable to all the so-called "gently stimulating liquids." They never take milk—there being no pasturage or

cows except for ploughing, milk has never become an article of diet with the Chinese. Among the Mongols—the nomadic tribes of the North—milk of course is a chief beverage. Hot water alone is plentifully drunk all the year round, but tea is *par excellence* the beverage of the people. It is most commonly taken very hot, and always made by using and adding to it well boiled and boiling water. This seems the secret of making good tea, apparently so little understood out of China and Russia. And we should not so often have to complain of bad tea if we were more careful about the quality of the water. Its stimulant and restorative action are aided when drunk hot. It is followed by no depression, and ought to be much more extensively used, and not as a meal—I ought to say never as a meal—as is so frequently the case three or four times daily by our factory girls and poor classes, and which is productive, when so used, of the very worst results. The Chinese drink it very frequently during the day, and it is always offered to guests on entering a house, but it never takes the place of a regular meal. Resting places exist every few miles, or more frequently, all over the country along the roads, where the tea the Chinaman loves is to be found. Many of our people, I fear, resort to the public-house merely to quench thirst. Fountains, the gift frequently of the philanthropic, are springing up in all our large towns, and these might beneficially be still more increased. Were the Chinese innocuous draught to be supplied cheaply, or even in some cases gratuitously to the poor, for example, the necessity of assuaging thirst by being driven to strong drink would be saved. No man is deprived by our laws of the means of his lawful gratification, but certainly great advantages would result from the Chinese plan. I am obliged to confess that I cannot see the *rationale* of so much denunciation of tea drinking, usually merely a cup, by our profession, when taken as in the kettledrum, or at any other time in the afternoon, or immediately before or after dinner. A thousandfold more evil has sprung, in my opinion, from the morning or afternoon's glass of wine, and the sherry cobbler, or sherry

and bitters, or brandy, &c., so frequently had recourse to as a fillip just before dinner, and frequently so recommended.

(*To be continued.*)

V.—CASE OF RENAL CALCULUS, UNDER THE CARE OF PROFESSOR
M'CALL ANDERSON, IN THE GLASGOW WESTERN INFIRMARY.

Reported by ROBERT MOFFATT, M.B., C.M., *Resident Physician.*

ON the 22d January, 1877, Alexander D——, æt. 20, a ship carpenter, was admitted into Ward 2, complaining principally of occasional pain in the right lumbar region, passing downwards and forwards towards the bladder.

Two years previously he had got his left ankle severely sprained, and on his admission into the Surgical Wards of the Western Infirmary two months after its occurrence, it was found necessary to amputate the foot. While recovering from the operation, his right knee became the seat of inflammation and subsequent effusion, which prolonged his confinement to bed for seven months, and during the latter part of that period he was freely stimulated.

About a month after leaving the hospital he began to experience an aching sensation in the right lumbar region, and in a short time this was replaced by a dull pain, which occasionally darted down towards the bladder. The onset of the pain was always preceded by some degree of heaviness and lassitude, and during and for some hours after each paroxysm, patient had nausea, retching, and frequently vomiting. At first these attacks recurred about once a month, but oftener if he exerted himself unusually, lasted for two or three hours, and then left him comparatively well. Latterly, however, the paroxysms have come on at shorter intervals, have been of longer duration, and much more severe. The urine at such times was, he thinks, higher in colour, and on standing, presented a slight cloudy appearance.

On admission patient looked a man in perfect health, and physical examination revealed nothing abnormal in the

various organs, except that on pressure there was some tenderness in the right loin. His appetite was good, and had been unimpaired all along, while his bowels were rather costive.

Patient, on the day after admission, had a recurrence of the pain, which he felt slightly in the perinæum, as well as in the above-mentioned parts. Relief was almost immediately experienced from $\frac{1}{4}$ gr. of morphia administered subcutaneously.

On examination, it was found that he had passed, in twenty-four hours, 50 ounces of dark straw-coloured urine—spec. grav., 1022—and presenting a decided “powdered wig” deposit, which, under the microscope, was found to consist of abundant octahedral crystals of oxalate of lime. For three days the pain returned again and again, and the urine all the while retained the above characters. Save slight sickness, patient was almost free from disturbance between the paroxysms.

Shortly after his admission into the Infirmary, this patient's case formed the subject of a clinical lecture by Professor McCall Anderson, who stated that the paroxysms of pain in the right side were dependent upon nephritic colic. He likewise gave it as his opinion that they were due to the presence of a calculus in the pelvis of the right kidney, and that the intense acidity of, and the presence of oxalate of lime crystals in the urine, favoured the view that its superficial layers, at all events, were composed of oxalate of lime. That this was actually the case will be shown by the sequel.

He was ordered on the 2d February to have light diet, and to take a tumbler of water night and morning, and between meals. For some days he was perfectly free from pain, but on the 5th he complained, for the first time, of pain at the point of the penis, and on one occasion the flow of urine suddenly ceased during the act of micturition. The urine presented a few crystals, which were usually absent between the paroxysms.

Forty grains of the citrate of potass in four ounces of

water were ordered, on February 7th; to be taken every three hours, and he had, in addition, barley water *ad libitum*. The quantity of urine, which had averaged about 50 or 60 ounces, increased the following day to 120 ounces, and was free from crystals.

Patient continued well without intermission till early in the morning of the 22d, when he felt an excruciating sharp pain—unlike anything he had before experienced—in the right loin, passing gradually downwards and forwards to the hypogastric region in the line of the ureter; then sudden relief from pain ensued, but he continued restless and somewhat exhausted during the day. On getting out of bed the following morning, and attempting to micturate, he was seized with a sharp, “stinging” pain at the “root” of the penis; urine was voided slowly and in small quantities, and then stopped abruptly, the cessation being attended by so much pain that he had to desist from any further attempt. Acting upon instructions, he lay quietly in bed with his pelvis elevated, and partook freely of barley water, along with the citrate of potass, and continued so for some hours, till his bladder became distended. To relieve this, he went down on his elbows and knees, or nearly so, grasped the point of the penis firmly for a few minutes, then suddenly withdrew the pressure and allowed the urine to come with a “gush.” This was repeated twice, the last time accompanied by an almost unbearable “cutting” pain passing slowly along the penis. At length the pain ceased, the urine flowed freely, and on examining the vessel, a small mulberry calculus, a little larger than a pea, was found at the bottom. From this, his last attack, he made a rapid recovery, and till March 10th, when he was dismissed at his own request, he had been free from pain, the tenderness in the loin had completely disappeared, his urine was perfectly natural, and patient himself stated that he felt quite well. On the 31st March he reported himself as being in the same favourable condition.

VI.—CASE OF CUT-THROAT—VERTICAL.—RECOVERY.

By J. MACFIE, M.D.

(Read before the Medico-Chirurgical Society.)

FOR the use of these notes I am indebted to the kindness of Dr May, of Tottenham, under whose care the patient was admitted into hospital.

Wm. R——, æt. 68, was admitted to hospital at 8.30 a.m. on the 21st of June, 1875. He was in a state of considerable weakness, having lost a large quantity of blood from an incised wound of the throat. From the nature of the wound he was unable to give an account of himself, although evidently quite conscious. From the evidence of the person with whom he lodged it appeared that the wound was self-inflicted by means of a razor, in a yard at the back of the house.

During the night he had been heard to leave his room where he slept alone, to go down to the back yard, and return. About seven o'clock in the morning he was found lying in his room, his clothes saturated with blood, and many marks of blood in the room, on the stair, and in the yard. When discovered the bleeding had stopped.

The man with whom he lodged also stated that R. had been lately working as a "ganger" on the railway, that he usually had good health, and was temperate, but that for some weeks he had suffered from severe attacks of pain in his left testicle, and that he had taken brandy occasionally to relieve the pain as he thought. The night before R. had complained much of the pain, and had sent out for some brandy. He had taken it, but he could not say how much was sent for.

Condition on admission.—R. has the general appearance of a tall, muscular, and hale old man. The wound is almost exactly in the mesial line, and extends from just over the lower edge of the hyoid bone to the cricoid cartilage, laying bare the thyroid, from the front and sides of which the soft parts have retracted. The surface of the thyroid is "scored" deeply a little to the left of the mesial line, but

the box of the larynx has not been opened into. The cartilage in front and at the sides is ossified.

The crico-thyroid membrane has been divided, leaving an opening into the larynx, through which one can put the tip of the little finger. The wound is about two inches long. It is rather ragged towards the lower end, but above it is a simple incised wound. On examining the left testicle it is found to be much swollen, and very painful.

On being put to bed a small piece of the crico-thyroid membrane hanging into the opening in the larynx was cut away, and a pad of cotton wool, wrapped in a piece of carbolic gauze, was tightly secured over the wound. It was noted the same evening that he breathed easily and regularly, but the opening in the larynx naturally caused a whistling sound with each inspiration. He took fluid nourishment well. Diet chiefly beef-tea and milk, with light pudding. Temperature, 100° ; pulse, 100° , regular.

23rd June.—R. takes nourishment well, and got tolerably good sleep last night. The bowels were moved this morning after a dose of castor oil. He has a little cough this forenoon. On examining the chest there is some bulging of the walls noticeable, with decreased mobility on inspiration. The percussion note is dull towards the apex of the left lung, and the respiration is faint over both lungs, but is less distinct over the left. The heart beat is slightly irregular, but without any other abnormal sign or symptom. The morning temperature was 98.4° ; evening, 100.6° .

24th June.—During the night R. was occasionally delirious, and had to be prevented several times from getting out of the bed. He intimates that he does not feel so well to-day. He has pain in the front of the chest, and the cough is rather more troublesome. The wound looks sloughy at the edges. Temperature in the morning, 102° ; evening, 102.2° .

26th June.—The patient has slept tolerably well the last two nights, and yesterday he seemed to feel easy and to have little pain. His temperature was 102° in the evening. To-day he does not take his food so well, and is much troubled with cough, and a rather copious muco-purulent expectoration.

The wound still looks grey at the edges. Every two hours the wound is to be brushed out with a camel's hair pencil and a watery solution of carbolic acid 1 to 80. A pad of salicylic wool, wrapped in a piece of carbolic gauze, is now used as a dressing. This evening the temperature was 102.9° , the highest point it marked in the course of the case.

On the following day, the 27th June, it was noticed that the cough and expectoration were increased. On examining the lungs, comparative dulness was marked at the left base posteriorly. There were whistling ronchi heard generally over the chest, but these were loudest over the left lung.

From this date, however, the chest symptoms steadily improved under treatment, by frequent poultices, with a mixture to relieve the cough.

30th June.—Since last date R. has been slowly improving, but during last night he has been troubled with rather free diarrhoea, and this has continued more or less during the day. Six dark coloured fluid motions in all. A sulphuric acid mixture was ordered for him, and he is to have two ozs. of port wine added to his diet.

6th July.—Since last note the diarrhoea has continued, the patient generally having from four to six fluid motions in the day, with considerable pain in the abdomen. Various astringents and opiates were given both by the mouth and per rectum, but with little effect in restraining the diarrhoea. He generally takes his food well. It consists mainly of milk, beef-tea, and light pudding. Four ozs. of brandy was substituted for the four ozs. of port wine he has been having lately. It has been noticed that for the last day or so he has shown a tendency to "choke" when taking fluid, and when given some milk this forenoon a severe suffocative fit of coughing came on. Shortly afterwards, on trying him again with the cup of milk, this was repeated, and some of the milk returned by the wound in the larynx. In the evening it was found that R. had taken very little nourishment during the day, the attempt to swallow always causing him to choke. He was fed this evening by

means of the stomach pump—about three pints of milk and strong beef tea being used. The tube was passed without difficulty. The wound has not contracted much, and is dry and red at the edges, but it has lost the grey sloughy appearance.

7th July.—This forenoon one pint milk and three-quarters of a pint beef-tea was injected by the stomach pump, and in the evening milk, beef-tea, and three ozs. of brandy—three pints in all was given by the same means. The diarrhœa continues, but is not so excessive. He had four fluid motions during the day. In the forenoon a starch enema, with $\frac{3}{4}$ of tinct. of opium was given, and this is to be repeated at 10 p.m.

10th July.—R. is evidently getting weaker and does not move so easily in bed. The cough and spit have been less troublesome lately, and the comparative dulness over the left lung has cleared up, but the ronchi still continue. Yesterday and to-day the pain and diarrhœa have been less. At present he gets a morphia suppository night and morning, and astringents occasionally by the tube. He is fed by means of the stomach pump night and morning. There is little change in the appearance of the wound generally, but on each side of the “score” in the thyroid cartilage a narrow strip of bone is quite bare and white.

20th July.—Since last date R. has continued much in the same general state, but the wound has contracted somewhat and the opening into the larynx is smaller. A narrow flat piece of bone about three-quarters of an inch in length was removed to-day from each side of the thyroid. They were both removed easily, one of them lying almost loose in the wound. Since the 6th of this month he has been fed twice daily by means of the stomach pump, but during last night he drank a little milk from a cup without choking, and this forenoon he drank two cups of milk and a little tea, so that the pump was not required. He drinks tolerably well if he takes a mouthful slowly and at intervals, but when he tries to take more than a single mouthful at a time he chokes, and this brings on a severe fit of coughing. The stomach

pump was employed this evening for the last time. Milk, beef-tea, along with several eggs and three ounces of brandy, was used at this time.

On the 24th July it is noted that he is steadily improving, and can now take a little semi-solid food, but he has still to take even fluids with care and deliberation. The diarrhœa requires to be kept in check by medicines.

On the 9th of August, after a more severe attack of diarrhœa than usual, he was ordered two five-grain pills of the extract of hæmatoxylin twice a day with a morphia suppository in the evening; this seemed to restrain the diarrhœa better than many of the other drugs that had been tried, and it was noticed that he swallowed the pills without difficulty.

20th August.—During the last ten days the wound has shown a much more healthy action, and has been contracting rapidly. The opening into the larynx has been closed since the 12th. Since the 14th R. has been getting up in the ward for an hour or two every afternoon. This evening he complained of a return of pain in the left testicle. It was much swollen and was tender with some effusion along the cord. The pain and swelling were relieved by hot fomentations and support to the part.

15th September.—Since last note R. has improved in all respects, but still very gradually. The wound heals slowly, and there is still a decided tendency to diarrhœa. The swollen testicle gives him considerable pain at times. To-day it was put up in Scott's dressing, which relieved in a great measure the pain and swelling.

The next entry in my note-book that seems of any importance is for the 12th October. The wound at this time was healed all but a point about the size of a pea, which discharged a little serous matter. He still suffers occasionally from the swollen testicle, but firm "strapping" never fails to relieve him. He takes food fairly well, and the bowels are regular.

A few days after this the wound was soundly healed. Throughout it has been dressed with a pad of wool wrapped

in carbolic gauze, and since the 27th of June it has been brushed out every two or three hours with weak carbolic lotion. R. did not leave hospital until the 8th of November. His general health was good, and the seat of injury marked by an insignificant-looking "puckered" cicatrix.

The account of this case is condensed from the case book, in which there was almost invariably a daily note taken of the state of the patient during the first two months of treatment. In offering a few remarks on it, I may mention two or three points that seem to be worthy of attention. A vertical wound in a case of cut-throat is comparatively rare, a transverse wound being much the most common. There is little mention made in the works on surgery I have consulted as to such a wound, although its occurrence is noted; and that it should be only slightly noticed is obviously not only on account of its rarity, but because the same dangers and difficulties have to be met and treated in wounds of similar extent in the thyroid region, whether they are vertical or transverse. Further than this the danger of fatal hæmorrhage in a deep transverse wound is increased according to its length; but this is not to the same extent the case in a vertical wound. This of itself would account for the greater attention in text books being given to transverse wounds of the neck. In the case before us the direction of the wound did not make the difference, in the amount of retraction of the soft parts, that might have been expected: for the thyroid with its front and sides quite bare projected in the centre of the wound—this being due to the soft parts being divided right down to the moveable cartilages to which they are so loosely attached. This retraction, as is shown in the history of the case, continued until the wound gradually healed from the deeper to the more superficial parts.

The prognosis, as may be supposed, was unfavourable from the first—taking into consideration the age of the patient, the severity of the injury, and that the wound was self-inflicted. As showing the unfavourable mental state, it may be mentioned that for a few days after his admission,

he required to be carefully watched, as he made several attempts to tear off the dressings, and intimated that if he had the means he would again try to kill himself.*

Later on, the supervention of bronchitis, diarrhoea, and the necessity of feeding him with the stomach pump, increased the gravity of the prognosis. With regard to the bronchitis, it seemed probable, from some of the signs of emphysema being present, that he had previously been subject to repeated attacks of cough, but I regret that when he was able to give an account of himself, I seem to have omitted to ask him specially as to this matter.

The one most favourable circumstance in the case seemed to be the comparative ease with which he assimilated nourishment, notwithstanding the frequent diarrhoea.

There was no special difficulty in this case in the use of the stomach pump; the tube being introduced easily, but occasionally the point seemed to hitch on the aperture of the larynx. The stomach retained the fluid nourishment well, but once or twice vomiting was caused when the maximum amount of three pints had been thrown in. When this happened the tube was immediately withdrawn.

Perhaps the most interesting portion of the case, however, is what refers to the cause of the difficulty in swallowing. This difficulty in swallowing did not become marked until the 6th of July, or fifteen days after the receipt of the injury. It might be regarded as probably due to the irritation of the injured pieces of bone causing a reflex paralysis of some of the muscles of deglutition. The probability that the inability to swallow was produced in some such manner seems to be borne out by the fact that the power of swallowing was improved shortly before the pieces of bone were removed, when in point of fact they were almost separated, and that it was completely restored within a very few days of their removal.

* In the Medico-legal aspect of the case, it is worthy of remark that the patient stated, in the most decided manner, that the wound was inflicted by himself, and that he had made use of a razor. The person with whom he lodged said that the razor had been found; and there seemed no reason to doubt the statement either of the one or of the other.

VII.—CASE OF ALLEGED HYDROPHOBIA.

By D. YELLOWLEES, M.D., F.F.P.S.G., *Physician-Superintendent, Glasgow Royal Asylum, Gartnavel.*

J. M., aged 26, a miner, was admitted into the Glasgow Royal Asylum, on a certificate of emergency, about 8.30 p.m., on 16th April, 1877. He was brought from Holytown by the inspector of poor and two policemen, and the full history of his case was not ascertained until afterwards. It was stated, however, that this was his first attack; that he had been ill four days; that he was suicidal, but not dangerous; and that the supposed cause of his illness was a bite by a dog three months previously. The medical certificate was in these terms—"He is very excited, and threatens to destroy himself. When food or water is offered him he becomes very excited, and says they will destroy him." He was very abrupt and irritable in manner, and very impatient of contradiction. For a little time he would speak calmly and reasonably, and in a few minutes became excited and repellent. He refused to walk to the ward, and had to be carried from the reception-room. His whole appearance and behaviour were those of a healthy man who had been suddenly seized with acute mania, and in whom the first ebullition of excitement had but partially subsided. His persistent refusal of food and drink at home seemed only to confirm this impression.

As he appeared much exhausted, and had been perspiring very profusely, he was at once placed in bed in the sick ward, and an attendant specially appointed to care for him. He was repeatedly urged to take some food or drink of any kind he liked, but he refused everything, even a drink of water, in a petulant, angry tone, saying that he only wanted to be quiet, and to be let alone, and that he would take food in the morning, "when the bile was off his stomach." He was continually hawking and spitting, and trying to retch, as if to get up the bile.

It was observed that a water-tap near the ward chanced to be opened for some purpose soon after his admission, and the sound of the rushing water was plainly audible at his bedside, but he paid no heed to it whatever.

When visited two hours later he was found to be again bathed in perspiration. He seemed very weak, and disinclined to speak, or to be interfered with. Although restless at times he had kept his bed and been quiet, but was still spluttering and spitting. He gradually sank, and died unexpectedly within four hours of admission.

The following history was subsequently obtained from his wife:—He was a man of sober habits and of good general health. Of late he had been working unusually hard in sinking a pit. He was bitten just three months ago by an ownerless, half-starved dog that had been about the village for a week or two, and with which he had been playing on the previous day. He was about to pat the dog, when it bit the middle finger of the left hand through the nail. The wound bled freely, but it gave him no concern, and he went on with his work as usual.

On Friday, April 6th, he went to Slamannan to visit a relative, and stayed there till the following Monday.

He was at work regularly all the week thereafter, until Friday, April 13th. On that day he took a good breakfast, and seemed well enough, but before 2 p.m., the hour at which his shift began, he said that his back was sore, and he had pains all over him, so he did not go to work, “but hung over the fire shivering.” He felt sick, too, and could take no food.

He had a pretty good night, but next day, Saturday, was no better: still had the pains, the shivering, and the sickness: about noon he vomited some bilious fluid. He still refused food or drink of all kinds.

On Saturday night he was restless, hot, and feverish.

On Sunday the symptoms were the same, but aggravated. Feeling thirsty, he rose from bed in the early morning and went to the pitcher for some water, but he could not drink it, nor even attempt to do so. In the afternoon he again did the same thing, and dipping the cup into the pitcher, twice raised it nearly to his lips, but laid it down again, saying that he could not take it. He then said he thought he could take milk, but when brought it was declined in the same manner. All solid food he absolutely refused. In the evening he com-

plained much of headache, and became unusually irritable. During the night he slept none, but was extremely restless and feverish, starting up in bed, or getting out of it, seeing imaginary objects, and talking incoherent nonsense.

On Monday he was very restless, and talking incessantly, sometimes sensibly, sometimes absurdly. He was very often spitting white frothy stuff, which he had done the previous day also, but not during the night. He still refused all food and all liquids, and would not allow them even to touch his lips. When much urged by a friend to take even a teaspoonful of water, he raised the spoon nearly to his lips, and then let both spoon and water fall on the ground, saying that he could not take it. In the evening he complained much of his head and left side, and again vomited some of the same bilious fluid as before. He said that his throat was not sore at all, but that he just could not take anything. When asked about the bite, he said quite decidedly that it had nothing to do with his illness, and that he had never given it a thought.

On Monday night he was brought to the Asylum and died, as above reported, within four hours of admission.

For the *post-mortem* examination I was glad to avail myself of the experience of my friend, Dr Joseph Coats, who has so ably and carefully investigated recent cases of hydrophobia in Glasgow. He has kindly supplied the following notes:—

Sectio cadaveris.—The body is well nourished. There are several old cicatrices on the hands, and the nail of the middle finger of the left hand is in process of separation, the new nail covering about half the matrix.

Head.—The blood in the longitudinal sinus is almost completely fluid. Inside the dura mater a small quantity of fluid blood smears the surface; it has gravitated chiefly towards the posterior parts. The ventricles contain a small quantity of reddish fluid. All the soft membranes are finely injected and present a rosy or pink colour, and on section every part of the brain is unusually red, and the *puncta hæmorrhagica* unduly distinct (fluidity of the blood).

Chest.—The heart is filled with dark blood, which is almost entirely fluid and tarry. The mitral orifice is dilated, admitting

three fingers freely. The left lung is non-adherent, and very deeply pigmented (miner's lung). From the cut surface a quantity of dark fluid blood exudes. The right lung is adherent, but otherwise like the other.

Abdomen.—The spleen is enlarged to at least three times its normal size. It is dark-red in colour, and moderately firm in consistence. Both kidneys are intensely hyperæmic, and there is a slight degree of hydronephrosis. The urinary bladder is dilated, and its muscular coat hypertrophied. There is no stricture of the urethra. In the small intestines all the Peyer's patches are enlarged, but this is very markedly the case towards the lower end of the ileum. Here the patches are pale in colour and considerably elevated, with distinctly demarcated edges. The surface of the patches also presents the irregular appearance seen in typhoid fever, though the enlargement is not so great as that at the acme of this disease. The solitary follicles in the lower part of the ileum are much enlarged. The mesenteric glands are generally enlarged, and red or pink in colour, but the enlargement is not very great. The liver is markedly hyperæmic.

Dr Joseph Coats has appended the following note to the report of the *post-mortem*:—The appearances presented are exactly those of an early stage of typhoid fever, the enlargement of the spleen, fluidity of the blood, and the specific lesion of the Peyer's patches and mesenteric glands. In certain of the other acute fevers, as measles and scarlet fever, there is enlargement of the Peyer's patches, but in my experience the very considerable enlargement in the present case, although not so great as that at the acme of typhoid fever, is alone reconcilable with that disease. I have never seen a lesion like this except in typhoid fever, and it is exactly what would be looked for at a very early period of the disease. I have not yet examined the nervous centres, as sufficient time has not yet elapsed for hardening them, but as the pathological appearances are so strongly indicative of typhoid fever, I do not expect to find any specific lesion.

Remarks.—The autopsy determined beyond question the true nature of what seemed from the history a somewhat

mysterious case. It was doubtless one of typhoid fever of the worst type, proving fatal at an unusually early period, and with the ordinary loathing of food intensified to a most unusual degree. The fever-poison was probably received at Slamannan, where typhoid was said to be prevalent, and as usual it attacked the stranger with special virulence.

The inability to take even water was so remarkable that it might well suggest hydrophobia, especially with the history of a previous bite. Indeed, without the unmistakeable evidence of the typhoid patches, it would have been impossible to exclude this theory, and many a case has been recorded as hydrophobia with far less reason.

There was, however, no dread of water *as water*; it was simply that "his stomach turned" at anything about to enter it with such utter loathing that he could not even attempt to swallow. This condition, and also the frequent spitting, were evidently connected with the actual state of the stomach, irritated, as it was, by the presence of the bilious fluid, which he vomited both on Saturday and Monday.

Of course the continued presence of biliary fluid in the stomach may arise from various causes; but given the persistent nausea thus induced, and the history of a previous bite, the mental perturbation which the dread of hydrophobia would then induce in certain temperaments, probably affords the true explanation of a large proportion of the alleged cases of this disease.

VIII.—TREATMENT OF SMALL-POX BY COLD BATHS.

By M. le Dr CLEMENT, Médecin des Hopitaux de Lyon.

Translated and Condensed by SAMSON GEMMELL, M.B.

IN the presence of a frightful mortality among unvaccinated patients attacked with small-pox (about 80 per cent.) treated after the usual fashion, I believed myself quite authorised in changing the method of treatment. Unfortunately I had only very vague indications of what had already been done,

and I could not find any exact details upon the mode of employing baths in small-pox. The authors who allude to it are Hebra, who in some cases advises the application of the douche three or four times a day, up to the time of the full development of the vesicle; and Curschmann, in Ziemssen's recent "Cyclopædia." Curschmann maintains that baths are only useful in the premonitory and eruptive stages, while he discountenances them in the stage of suppuration. From what I have observed, however, with a few exceptional cases, the danger in small-pox seems to be almost entirely in the fever of suppuration, and I think that it is above all against this that treatment should be directed. The stage of eruption, even in severe cases, is rarely fatal to the patient, and after the rash is fairly out there is usually a slight lull in the symptoms, and as the real danger is in the fever of suppuration, I thought the bath treatment would be most applicable to this period. I resolved, therefore, to submit all cases of irregular or confluent small-pox to treatment by baths, and to give an exact account of my results.

Case 1.—*Hæmorrhagic Small-Pox; Confluent Eruption; Seven Baths; Recovery.*—R. B., unvaccinated, admitted July 9th, on the first day of the eruption, with a temperature of 41.2° C., a confluent eruption, with a very livid tint of the skin of the limbs, some of the vesicles filled with blood. On July 12th (fourth day of eruption) the state of this patient became most alarming; great restlessness and delirium, so extreme as to require restraint with the jacket. The eruption is *very irregular, quite flat*, and the ecchymosis into and around the eruption has increased. The temperature not much increased. A bath was ordered for three-quarters of an hour, at 28° C., till he had a decided shivering. This first bath had for its immediate effect the cessation of the delirium and restlessness, and the difficulty of deglutition and thirst were greatly relieved, and he passed a quiet night. The next day his temperature was from 39.6° to 39.9° ; he took two baths of half an hour each; the eruption was much better risen, and was becom-

ing lactescent. The ecchymosis persisted, but delirium had ceased—there was also a degree of swelling of the hands. He took regularly two baths daily up to July 16th. Desiccation had commenced by the 17th, and on August 9th he was dismissed well.

Case 2.—*Confluent Small-Pox; Hyperpyrexia; Eleven Baths; Recovery.*—D. R., aged 19, unvaccinated, admitted July 26th, on the seventh day of eruption. His state seemed so desperate that on admission I did not submit him to the treatment, but next day his temperature gradually mounted up to 41.6° C.; he was very restless, muttering incessantly; pulse 120; tongue dry and foul, and his speech inarticulate. In the face of certain death I resolved to give the treatment a trial. He had a bath at 28° C. for a quarter of an hour, till he shivered a little. The temperature fell to 38° , i.e., 3.6° C., and I thought I had induced collapse. He seemed better, however, groaned less, and the pulse had fallen to 84. Towards morning he again became worse; his temperature had risen to 39.5° , and he had another bath, which reduced it to 36.7° . Towards night it again ran up to 40.5° , but another bath brought it down to 38.9° . On the 31st July he had three baths, and during this day and August 1st the temperature before the baths still rose to 40° C. He took two baths on the 2nd, and on the 3rd Aug. he had his eleventh and last one. From this time he gradually recovered.

Case 3.—*Confluent Small-Pox; Extreme Dyspnœa without Cardiac or Pulmonary Complication; Baths at a temperature varying from 25° to 14° C.; Death.*—J. C., aged 46, unvaccinated, admitted July 31st; temperature in the evening, 40.3° ; and next morning; 39.5° ; diffused redness of the face; eruption very small; extreme confluence on the fore-arms and thorax; tongue dry. On the 6th August he had one bath, and two on the 7th, but as the water at 25° C. made only a faint and transitory impression on the temperature, and as danger was imminent, on the evening of the 7th he had a bath at 14° C. for a quarter of an hour. This depressed the temperature to 39° , but in an hour it had risen again to

40·7, and the respirations had increased to 80. On August 10th he had two baths during the night, but the temperature soon ran up again to 41°. Coma and other symptoms supervened, and he died.

Case 4.—*Confluent Small-Pox; Fifteen Baths from 25° to 22° C.; Recovery.*—F. P., unvaccinated, aged 48, admitted August 8, 1876. The premonitory symptoms had commenced on the 4th, and the eruption had appeared on the evening of the 7th August. Diffused redness of the face, with numerous papules, small, and thick set; a diffuse blush all over the body; eruption most abundant in the sternal region; pulse 100; temperature 39·7° C. By August 11th the eruption had become extremely confluent on the face, arms, and thorax, and quite corymbose on the lower extremities. Temperature in the evening, 40·9°. August 12th, temperature in the morning, 40·4° C.; pulse 120; considerable swelling of the face, and of the hands and feet, but no salivation. At six o'clock he had a bath at 25° C., which reduced the temperature to 39·3°. From this time he took regularly two baths daily, the temperature of the water varying from 20° to 23° C. The immersion lasted from sixteen to twenty minutes, according as the shivering came sooner or later. He made a speedy recovery.

Case 5.—*Hæmorrhagic Small-Pox; Eleven Baths; Death.*—J. B., unvaccinated, aged 25, admitted September 1, 1876, with a confluent variola, attended by ecchymotic patches on the forearms, and hæmorrhage into the eruption. From the 6th to the 10th of the month he took eleven baths, about three daily, at a temperature of 26° C., and only for a quarter of an hour. He died on the evening of the 10th in extreme dyspnœa, without any apparent pulmonary or cardiac cause.

Case 6.—*Confluent Small-Pox; Right Pneumonia; Eighteen Baths; Recovery.*—J. C., unvaccinated, admitted August 21st, 1876. The treatment was commenced on the second or third day of the fever of suppuration, with a temperature of 40·6° C. Next day in spite of the baths the temperature rose to 41·6° C. On the 28th August pneumonia of the

base of the right lung was discovered. The baths were given twice daily in spite of the pneumonia, the heat of the water being about 28° C. The baths were continued up to September 3rd, but the convalescence was rather slow, owing to the formation of abscesses.

Case 7.—*Confluent Small-Pox; Treated by Baths; Rapid Recovery.*—A. R., aged 21, unvaccinated, admitted September 29th, 1876, with an eruption of an extremely confluent type all over the body, with much delirium and considerable cough. On October 2nd, the first day of the fever of suppuration, the temperature ran up to 39.8° C., and he had a bath at 25° C. On October 3rd it is noted that he had no delirium on the preceding night, although he muttered a good deal in his sleep. Rash very confluent. Had two baths in the day. On October 4th other two baths, and by the 5th of the month the patient was much improved, and the rash looked more healthy. As the temperature at night only attained to 39.4° C. the baths were omitted. Complete apyrexia did not come about till the twenty-second day of the eruption.

In the period immediately preceding the employment of the baths, I had treated ten unvaccinated cases of small-pox, eight of which had died. Of the seven cases treated by baths only two died, and these were both of a hæmorrhagic type. The others were cases of extreme confluence, closely analogous to the cases that died under the ordinary treatment. No generalizations can be based on such a small number of experiments, but one fact seems established, that the baths do not necessarily determine any of the dangers popularly attributed to them. On the contrary, they seem to give the most grateful relief to the symptoms.

Effects produced by baths upon small-pox patients.—The most immediate effect is a fall in the temperature, often suddenly, of some degrees. In one observation we have seen a first bath cause a defervescence of nearly 4° C. This action may bring about serious results if baths of a very low temperature are employed. In enteric fever a very rapid fall of the temperature is rarely seen, and the explanation of it in small-pox may be, that owing to the intense congestion

round the eruption the dilated capillaries present a much greater mass of blood for refrigeration, and so the depression of temperature is brought about with greater certainty and rapidity than in typhoid fever. In small-pox I look upon an easy depression of temperature by the first baths, as of good omen. During the three hours which follow the bath the temperature remains stationary, or only rises slightly. From the third to the fifth hour the temperature rises from 1.2° to 1.5° C. The bath thus allows the patient a longer apyrexial period than in enteric fever.

Delirium in several of the cases ceased soon after the first bath.

Under the influence of the bath the pulse is reduced in rate. In one case it fell from 120 to 84 after the first immersion. The same is true of the respirations.

The eruption in all the cases, even in those that ended fatally, has always been favourably modified. After the second bath I have generally seen the vesicles become larger and fuller. Also, during the suppurative stage the tint of the vesicles becomes more opaline, and of a better nature. This, after the abatement in the temperature, is one of the most favourable actions of the baths. Perhaps it might be increased by adding some antiseptic substance to the bath. Baths repeated at a temperature from 22° to 28° C. never detach the skin, or raise it in blisters; and as the skin does not require to be dried, it need not get excoriated by rubbing.

As is well known, enteric patients treated by Brand's method often complain of very severe pains in the feet, and it was to be feared that among small-pox cases it would cause an increase in the pain already existing in these parts. Happily this was not the case. Those treated by the baths have not suffered more than those treated in the ordinary manner.

Rules for the application of the Baths in the treatment of Small-Pox.—At what time should they be given? I have had ample opportunity of studying all the special indications, and I have come to the conclusion that they are useless in the

period of eruption. This period is always followed by a lull, with a considerable fall of temperature, and it is, therefore, superfluous to interfere at such a time.

If the case is confluent it is a matter of certainty that the fever of suppuration will endanger the patient's life. It is therefore necessary, by regular thermometric observations, to seize the moment when a rise indicates the accession of this fever, and commence the treatment at once. Delay is useless and dangerous.

The first baths should always be of a temperature from 25 to 28° C., and at this degree they determine a distinct defervescence, sometimes very marked. The effect of the bath must be carefully gauged by the thermometer. The patient ought to be quite beneath the water, so that his shoulders may be constantly submerged. This is an important detail. From time to time water can be poured on the head. The duration of the bath varies from fifteen to twenty minutes, or even more if he does not shiver readily. Envelop the patient in a sheet, and put him to bed, covering him with only a simple woollen covering. At first he feels a little cold, but reaction soon sets in. The feet should be more heavily covered than the other parts of the body. Immediately after the bath a little wine is administered, and in the interval he may have a mixture containing some mineral acid, but never hot drinks.

The baths, according to the thermometric indications, are repeated several times in the twenty-four hours; as a rule, two or three are sufficient.

Reviews.

I.—A TREATISE ON THE DISEASES OF THE NERVOUS SYSTEM. By WILLIAM A. HAMMOND, M.D., &c., &c. With 109 Illustrations. Sixth Edition. New York, 1876.

In the number of this *Journal* for November, 1871, we reviewed the first edition of this now well-known and substantial book, then recently published, and now presented to us in a consider-

ably enlarged, and we must add improved, sixth edition. It cannot be necessary, under these circumstances, that we should repeat the praise which we gave ungrudgingly to the first edition, and to its industrious and almost too able author, for the vast amount of erudition and of personal observation which he has brought into a moderate compass for the student of disease. A book which reaches a sixth edition in a like number of years has no need of the reviewer's plaudits; while, on the other hand, its faults, if there be such, have acquired an importance not necessarily appertaining to those of a work struggling into favour and popularity. It will be only on this account, if at all, that our present notice will seem, either to the author or to others, less laudatory or more critical than the previous one. For Dr Hammond we continue to have, as before, a feeling of strong personal admiration, mingled with a certain amount of distrust: indeed, it is impossible, in reading his work, not to be buoyed up upon the flood of his amazing energy and security of conviction in all dark and doubtful matters, until one is rudely tossed against one of those facts, not doctrinal but practical, and arising out of personal experience—

“ Chiels that winna ding,
And downa be disputed,”—

whereon we often find that our author's multifarious knowledge suffers something like shipwreck. At the same time, we must admit that, among the many quicksands and the almost endless difficulties connected with the theory of diseases of the nervous system, it is perhaps impossible to find a perfectly safe guide, and that, if any one will read Dr Hammond's book with his eyes open and his mind well informed from other sources, he will find in it a great deal of assistance in almost any inquiry he chooses to take up within its special range. It is, indeed, this peculiar faculty of laborious and, at the same time, rapid reading, and (up to a certain point) assimilation of the labours of others, that gives value to Dr Hammond's book, even more than the original and personal research embodied in it. It is a compilation by a busy man, therefore in some respects a hasty compilation; yet withal it is so heartily done, with such an evident desire to be thorough and complete, and with such a show of independence and knowledge at every point, that we incline to pardon the author all manner of slips in detail, could we but gain confidence in his methods and in his results on the whole. The chapters that are best done are undoubtedly those in which he either relies chiefly on personal experience, or yields himself almost entirely to the office of reporting the doctrines of such teachers as Charcot: indeed, the

chapter on the inflammations of the spinal cord, in the present edition, is confessedly an exposition of the state of science as represented by the eminent French pathologist; and there is perhaps no account of his researches in the English language of equal fulness. In this and many other chapters the work has greatly profited by an increased amount of care, and by much positively new information since the first edition. We even find with pleasure that most of our own criticisms in detail have been noted and dealt with after a more or less satisfactory fashion. But there remains the "farrago libelli"—the attempt to put incompatibles into one vessel, to melt down all the views and doctrines of all the authorities into one all-comprehensive system; and it is here that the author fails, and must needs fail. The subject is not even now sufficiently matured for this attempt; and we find in the pages of this work too many vestiges of the days when an eclectic physician (how sadly this term has degenerated in America!) like Borhaave tried to trim between acid and alkali, and spontaneous gluten, and spasm of the extreme vessels. In a practical work this is a serious fault, because it is sure in the hands of Dr Hammond's admirers and scholars, if not in his own, to lead to great mistakes in practice. In a work which pretends to be of authority, and which deals with grave issues involving life and death, it is of primary importance to feel that we are under the guidance of one who never allows himself to state as fact that which is not at least a fair inference from perfectly secure data, either established by direct observation, or proved by such evidence as would compel conviction if it were fully stated in detail. Of course, the details do not always require to be fully given, and could not be so usually in a work like this; but we desire to follow a guide who keeps a careful guard upon his own utterances—who is not addicted to being quite sure of anything that is likely in a year or two to be, or that even now is, discredited by the course of scientific research. Measured by this test, Dr Hammond's work fails, we think, with all its acuteness, and its many striking merits, to satisfy the reasonable expectations of the profession, and especially of the practitioner. And it is not necessary to travel far beyond the parts of the book to which objection was formerly taken by us, to show that our criticisms six years ago have only served to bring into more strong relief the rash and dubious assumptions which underlie a considerable part of Dr Hammond's pathology.

At p. 84, *et seq.*, of our review above referred to, we indicated, in language quite devoid of asperity, but still intended to be quite explicit, our emphatic dissent from the author as to his

whole method of dealing with the so-called "congestive" affections of the brain and spinal cord, and also with the contrasted forms of anæmia, especially of the cord. That Dr Hammond has become aware of our strictures, we hold to be certain; for he has in this edition considerably toned down the sharpness of his demarcations of the forms of cerebral congestion, and has substituted more vague propositions for the apparently exact numerical statements, as to which we affirmed that they could not possibly represent *facts*, but only the somewhat arbitrary *ideals* of the writer, to which the facts had subsequently been accommodated. To be more precise, it appears from the first edition that Dr Hammond's cases of cerebral congestion up to 1871 had accurately and symmetrically sorted themselves out in his mind, and in his case-books, so as to form perfectly distinct categories, as thus:—

					CONGESTION.	
					ACTIVE.	PASSIVE.
Arrested in early stage by treatment,	...				478	84
Not so arrested, but proceeding to fully-						
developed apoplectic form,	...	...	...	...	16	9
Epileptic form,	...	...	...	...	9	19
Maniacal form,	...	...	...	...	4	3
					507	115
					622	

We have purposely set out the results of the statements of the first edition in this tabular form in order to have the opportunity of remarking, *first*, that the whole of these portentous numbers of actual cases have been replaced by general statements of merely proportionate numbers in the present edition; and *secondly*, that the three fully-developed types above mentioned have been found insufficient for the author's later experience, which has furnished him with the following additional types—viz., the paralytic, soporific, and aphasic. Now, as the whole basis of this chapter is evidently adopted in the first instance from Andral, and as credit is claimed in the first edition (p. 33) for cutting down Andral's eight types to three, it really seems as if Dr Hammond's later thoughts had reverted towards the original source in spite of himself. At all events, the presumption is very strong that, in one way or other, the sharply-defined tabular and numerical view given above has ceased to represent accurately the later convictions of its author; who, however, adheres in the present edition to the substance of a proposition which we have read with more amazement than we can well describe, that "a spontaneous cure—i.e., of the early stage of cerebral congestion—is rare. . . .

Of the cases that have been under my observation, the disease was arrested at the first stage, in about 95 per cent., *by appropriate treatment, while there was not a single instance of a spontaneous cure*" (p. 36). Let the reader observe carefully what is implied, if not openly expressed, in this statement. If it means anything, it means that in 1871, up to which date the numbers are precisely given, Dr Hammond had "arrested by treatment" 478 cases of active, and 84 of passive, cerebral congestion, *every one of which would infallibly have gone on into one or other of the "fully-developed" forms, but for the treatment.* How important, then, to distinguish between "active" and "passive" congestion in the early stage, seeing that the "appropriate treatment" which can alone rescue a case from passing into the more fully-developed forms of either differs entirely in the two varieties, as indicated by Dr Hammond himself (p. 50). But on turning to the paragraphs concerning this all-important diagnosis, it is only too apparent that not only has the author no practical information to give us as to the early stages of the passive congestions, but that he has himself no definite ideas of diagnosis between active and passive congestions in any stage of their development. The same formulas are repeated throughout; and the effect upon the mind even of an attentive reader is that of absolute confusion. "As in active cerebral congestion, (so also in the passive form), there is a premonitory stage *the symptoms of which are similar to those previously described.* . . . The stupor, or tendency to somnolence, is the most prominent feature. . . . The degree of congestion may be suddenly increased, or, what is a more probable sequence, there may be an effusion of serum; and then, in either case, the second stage, exhibiting itself as in the apoplectic, the paralytic, the convulsive, the soporific, the maniacal, or the aphasic form, results" (p. 40). And so on, through a page and a half more of so-called description of the "passive" varieties of each of these forms. After this, it seems little less than a mockery to inform us, at p. 50, that, "recollecting the two grand forms of cerebral congestion" (active and passive, to wit), "*the principles which should guide us in the treatment will be clearly apparent.*" In the active type of the disease, the force of the cerebral circulation, and the quantity of blood in the blood-vessels of the brain, are to be *lessened*; in the passive variety, the force of the circulation is to be *increased*, and at the same time the accumulation of blood in the veins to be diminished." It seems needless to attempt to apply the lessons of treatment in detail, when the "principles" which ought to be so "clearly apparent" fail so utterly to guide us. Yet every one of the local and general

remedies recommended—*e.g.*, local blood-letting, cold, elevated position, galvanism, bromide of potassium, ergot, &c., in the active form; stimulants and digitalis in the passive—are recommended with the same unhesitating and unfailing confidence as if the indications to guide their employment had been among the most simple and well-established facts of pathology and diagnosis.

After this, and knowing as we do the older and often-cited remarks of Gooch and Marshall Hall, it is not at all a surprise to us to find that “cerebral anæmia” may simulate, in particular cases, every form of cerebral congestion. “The principal affection,” says Dr Hammond at p. 61, “with which cerebral anæmia is liable to be confounded is cerebral congestion.” Nay, more: the *treatment* of cerebral anæmia is in one point exactly like that of *passive* congestion—viz., in giving “alcohol in some form or other, and carbonate of ammonia, as stimulants;” and in one point, at least, like that of *active* congestion—viz., in the use of the “primary galvanic current applied to the brain or sympathetic nerve” (pp. 63-65).

Is it not surprising that an intelligent, clever, and well-informed man like Dr Hammond should write such paradoxes as these for whole chapters together, not only without a sense of misgiving, but in a tone of triumphant superiority to all doubt and distrust, whether pathological or therapeutical? What are we to make of the rest of his book, when he behaves thus like an *ignis-fatuus* at the very beginning of it? The simple truth is that, as was shown exhaustively by Dr John Reid more than thirty years ago in the case of the cerebral complications in fever, and as has been amply verified since in other cases, there is “no necessary relation between the extent of the cerebral symptoms during life, and the quantity of serous fluid, or the quantity of blood in the vessels, after death”*. Andral himself, in building up his theory of cerebral congestion, which has had such an influence on many minds since his time, relied only on *five* fatal cases; and we may safely say that not one of these will stand in the light of modern pathology. To these he added, in order to work out the symptomatology of his eight forms, “beaucoup d’autres cas du même genre, receuillis par nous, qui se sont terminés par la guérison”†—largely, no doubt, under general blood-letting, a measure of which Dr Hammond says (p. 50)—“I have never seen a case in which it was required.”

* *Physiological, Anatomical, and Pathological Researches*. By John Reid, M.D., &c., &c. p. 485. Edinburgh. 1848. (Published originally in 1842.)

† *Clinique Medicale*, V., p. 245.

But Dr Hammond's own fatal cases, as indicated briefly in p. 47, were by no means all cases of pure cerebral congestion. He says "four were from softening, one from cerebritis, one from hæmorrhage, and one from general paralysis."

We do not doubt for a moment that Dr Hammond has seen a great number and great variety of mild and manageable cerebral seizures of obscure nature in the course of his practice, nor that he has treated them to the best of his knowledge, and in a certain sense successfully; but when he marshals his cases into ranks and orders of active and passive, and deploys them in regiments of first, second, and third stage, and companies of apoplectic, &c., &c., &c., we feel that he outsteps the bounds of reasonable precision in diagnosis, and we should have been much more satisfied with his treatment had he not been so cock-sure about it, and so utterly devoid of doubt as to the nature and pathology of the cases in which it was applied. In point of fact, we have very little scruple in intimating our decided conviction that most of his milder cases were not cerebral congestion at all—perhaps not even cerebral cases, properly speaking, in any real or pathological sense of the term; and that the graver ones, and perhaps a proportion also of the milder, were cases of *small* hæmorrhage, softening, embolism, &c., limited in area, and often (though he does not think so) undergoing spontaneous cure, such as we, in our much more limited experience, have witnessed scores of times in like cases. Nevertheless, we attach a certain degree of importance to Dr Hammond's remarks on treatment, and should have felt much more respect for them and for him had he stated them in a way more in accordance with the modesty of nature.

Space will not allow of our extending the remarks which might be made upon the various chapters of this work; and in the main we adhere to the opinion formerly expressed about it—that it is one of great value for the general student of nervous diseases. Most of the subjects coming within range are very fully, some of them almost too fully, discussed; and in almost every chapter we find alterations, and in general considerable improvements, on the first edition. There are some important omissions—*e.g.*, Ménière's disease is only once mentioned, so far as we have observed, incidentally; and the whole subject of vertigo is slurred over as if it was altogether an insignificant symptom, instead of a fact often of prime importance. The subject of aphasia, again, is treated at quite inordinate length, and not, after all, very satisfactorily, inasmuch as the whole discussion leads up to a theory, not clearly supported by the evidence, as to the distinct localisation of amnesic and ataxic

aphasia. On the whole, however, the book demands our hearty recognition as a great literary fact, and a most material aid, with such reservations as those to which we have alluded, in the study of a most fascinating and intricate subject.

II.—INFLUENCE OF CLIMATE IN PULMONARY CONSUMPTION. LETTSOMIAN LECTURES FOR 1876. By CHARLES T. WILLIAMS, M.A., M.D., Oxon. London: Smith, Elder & Co. 1877.

THIS little book is an attempt to indicate, on a statistical basis, the relative virtues of certain of the phthisical resorts at home and abroad. Attempts have been made in this direction before, but never on such a large number of cases; and although the inquiry is as yet only *in limine*, and allowance must be made for the proverbial insecurity of conclusions founded on statistics, still, any attempt made to further our knowledge of treatment of such a scourge as consumption, should be looked upon in a very friendly light. The difficulties in the way of such an inquiry can hardly be estimated, and opinions are so conflicting and fragmentary that nothing but very general indications can be afforded.

Dr Williams has selected certain places in the south of England, and has carefully noted the effect which residence at these spots has had upon the disease. The chief places are Torquay, Bournemouth, Ventnor, Brighton, and Hastings, and the outcome of his labours, founded on observation of 243 cases, is that Hastings stands at the head of the list, both in the large percentage of "improved," and in the small number of "worse." Next comes Ventnor, then Bournemouth, and last of all Torquay. It follows, then, in these cases, that the most easterly and least warm of these situations has proved most efficacious in arresting the disease, while the warmest, Torquay, has had least power of doing so. But Dr Williams immediately applies this as a general law, and says that in consumption a bracing, though gusty climate, avails more than a milder and relaxing one. To this line of argument we emphatically object. It holds good for his small experience, but very possibly the next observer may find the reverse the case. With regard to climatic influences out of this country, he is inclined to think that sea voyages, especially to Australia or New Zealand, occupy the first rank in point of benefit derived by patients, very dry climates the second, and the south of Europe dry climates the third. Most observers agree in this.

The statistics are the only original matter in the book, and we cannot say they have influenced our opinions very much. The treatment of consumption, especially in its climatic aspect, can never be definitely settled on such a basis. There are too many disturbing elements, social as well as physical, to allow of its being so. Still, much information and guidance may be afforded from Dr Williams' point of view, and his book may be consulted as a fair epitome of what is known on the subject.

III.—LECTURES ON ORTHOPEDIC SURGERY AND DISEASES OF THE JOINTS.
Delivered at Bellevue Hospital Medical College during the Winter Session of 1874-1875. By LEWIS A. SAYRE, M.D. London: J. & A. Churchill. 1876.

THE name of Professor Sayre has been so long associated with the special department of orthopedic surgery, that any work from his pen is sure to receive a hearty welcome in this country. The volume now before us will certainly increase his reputation, not only as a most ingenious and successful surgeon, but also as an able writer and clear expositor. While it is in the form of clinical lectures delivered to the students of the Bellevue Hospital, it may yet be said to possess all the completeness of a systematic treatise combined with the freshness and interest only to be obtained from a series of admirably reported clinical demonstrations. Accepting Andry's definition of orthopedy "as embracing the study of all deformities of the human frame," Professor Sayre, in his first lecture, gives a short history of orthopedic surgery. This is followed in the next few lectures by a general statement of the various kinds of deformities, their causation and treatment. It is to paralysis that Dr Sayre attributes the great majority of all cases of deformity, both congenital and acquired, and on this theory his whole practice depends. He thinks that if cases of so-called congenital deformity like club-foot are only seen early enough, tenotomy and other severe measures will hardly ever be required. Several interesting cases of reflex paralysis producing deformity are also reported, as, for instance, three cases, where talipes equinovarus was dependent on congenital phimosis and adherent prepuce, and was only cured after circumcision. Dr Sayre's plan of treatment may be summed up thus: Manipulate the parts thoroughly, yet gently, and as long as may be neces-

sary to bring them back to their normal position, and at all times allow freedom of movement to promote their healthy nutrition. No fixed apparatus of any kind is to be used, except for a very short time only. All must be elastic or jointed, and at first must be adapted to the deformity, not the deformity to the apparatus. Fixed apparatus like the ordinary Scarpa's shoe is wrong in principle and mischievous in results. Even in the worst possible cases there ought never to be the slightest irritation of the skin, far less ulceration or sloughing from the use of apparatus. Dr Sayre's watchword is a negative one: "No anæsthetics. No pain. No crying." The cases in which tenotomy is to be employed must respond to a definite test, the rationale of which, however, we must confess, we fail to see. Here it is expressed in his own words:—

"The law which is of universal application in deciding this question is the following:—Place the part contracted as nearly as possible in its normal position by means of manual tension gradually applied, and then carefully retain it in that position; while the parts are thus placed upon the stretch, make additional point-pressure with the end of the finger or thumb upon the parts thus rendered tense, and if such additional pressure produces *reflex contractions*, that tendon, fascia, or muscle must be divided, and the *point* at which the reflex spasm is excited is the point *where* the operation should be performed. If, on the contrary, while the parts are brought into their normal position by means of manual tension gradually applied, the additional point-pressure does *not* produce reflex contractions, the deformity can be permanently overcome by means of constant elastic tension, and the more you cut the greater will be the amount of damage done."

How pressure on a fascia or tendon can produce reflex contraction, we quite fail to see. Having next described the operation of tenotomy in the usual way, he goes on to describe the further treatment of the part. If the case have been one of talipes, then immediately after section he fixes the foot to a thin sole piece of wood by a bandage and two strips of adhesive plaster, one carried from the toes to a point two-thirds up the front of the leg, and the other across the sole and up the outside or the inside of the foot, according as the case may be varus or valgus. Similarly he restores the parts as far as possible to their normal position immediately after section in all cases of deformity due to muscular action alone. But in the case of acquired defor-

mity dependent on previous disease of a joint, and terminating in ankylosis, the division should be made and the external wound be permitted to heal before resorting to force to break up the ankylosis. "If motion and force are applied in this class of cases immediately after section has been made, air may enter the wound, inflammation follow, and suppuration be established." The supporters of antiseptic surgery will not be much deterred by that last possibility. In all cases, Dr Sayre holds that movement should be practised every day, and as soon as the wounds heal that some apparatus like Barwell's, where an elastic band is used to replace each paralysed muscle, should be adopted. Dr Sayre has invented a boot for the better management of talipes cases, which may be described as a Scarpa's shoe with a joint in the middle of the sole, and another at the ankle, and elastic bands replacing all the stiff rods and steel springs. This joint in the sole is to carry out a theory of the author's, that all movements to correct the deformity of simple varus must be made at the "medio-tarsal joint." Dr Sayre curiously enough holds that there is no lateral movement whatever of the foot permissible at the ankle-joint. "Turning the toes out or in, is produced by rotation of the thigh and leg at the hip-joint, or by the revolving motion of the fibula, produced by the contraction of the biceps and tensor vaginæ femoris, when the knee is flexed." To this doctrine we must reply with Professor S. D. Gross, who has already opposed it in America, "I shall still continue to make *lateral* motion at my ankle-joint without rotating my hip or revolving the head of my fibula." By reference to figures 68 and 69, it will be seen that on this point Dr Sayre lays himself open to a charge he himself brings against some other authors, of their theoretical descriptions not being in accordance with their actual pictures.

As regards other means of treatment of deformities, Dr Sayre also places considerable value on the use of electricity. He gives this especial caution as to its use; that the deformed part should be restored to its natural position and held there so as to relieve the paralysed muscles by approximating their origin and insertion before the battery is applied. "The principle is, the paralysed muscle should be placed in such a position that when stimulated to contract in response to the electric current, it can do so without carrying any weight."

Medicinal agents are only serviceable to remedy constitutional defects, with the exception, perhaps, of Strychnia, which, besides giving in the ordinary way, Dr Sayre also uses by sub-

cutaneous injection of $\frac{1}{60}$ of a grain once every eight or ten days into the paralysed muscle itself.

The latter half of the book is taken up with a clear and sound exposition of the nature and treatment of joint-disease, especially the class of so-called scrofulous or tubercular diseases. These joint-affections Dr Sayre does not consider scrofulous at all, but rather that they are simple traumatic inflammations which run a chronic course, and which no doubt may be found in scrofulous subjects, but in the majority of cases occur without evidence of this constitutional taint. He does not hold, as has been asserted of him by some, that scrofula is a preventive of joint disease. On the contrary, he states that, "All things considered, a smaller amount of injury will produce the disease in one of those miserable sickly children than in a healthy robust child. But the sickly scrofulous child who clings to his mother's apron does not run the risk of getting hurt as do those active restless children who run races, climb over fences, jump out of apple trees, kick their playmates downstairs, ride down balusters, and are generally careless and reckless." He supports these opinions by elaborate statistics drawn from his own practice, and has thus arrived at almost precisely the same results as have been already published in this country by, among others, Bryant and Holmes, in their recent text-books.

Dr Sayre also combats at great length the view formerly so general among surgeons that spontaneous dislocation of the head of the femur may take place in the last stage of morbus coxæ. He declares that no surgeon has ever yet sustained this assertion "by the evidence of a single post-mortem examination." In this, however, he goes a little too far, as both Mr Erichsen and Mr Holmes, in their text-books, describe cases and give drawings of actual specimens of such dislocations. Mr Holmes has studied this disease very carefully, and states that while actual dislocation is rare, it yet does occur. (For cases, see *Surgery, its Principles and Practice*, p. 443; and *Surgical Treatment of Children's Diseases*, p. 438.) The more common deformity, however, consists, as Dr Sayre states, in enlargement of the acetabulum, erosion of the head of the femur and relaxation of the ligaments, so that the femur rises higher in the hip than usual and being rotated inwards, simulates dislocation.

In the treatment of these joint affections, Dr Sayre displays great ingenuity and skill. His various splints and apparatus, and the care with which they are applied—and we may add the simplicity and clearness with which they are described—are worthy of all praise. His short hip splint is already well

known in this country, but his long splint, his knee and leg splints are not so, while they seem as worthy of adoption. But we cannot particularize further. Dr Sayre's book is that of a learned and ingenious surgeon who has spared neither time nor pains to master his subject, and to explain its difficulties to others.

IV.—A DIRECTORY FOR THE DISSECTION OF THE HUMAN BODY. *By* JOHN CLELAND, M.D., F.R.S. London: Smith, Elder & Co. 1876.

THE "Directions for Dissection," which appeared at the end of the second volume of Quain's Anatomy, seventh edition, having been omitted from the issue of that work recently published, are now put before us in a separate form (with numerous additions and alterations), under the above title. Originally published by Dr Sharpey for the use of his students, when he lectured on anatomy in Edinburgh, the "Directions for Dissection" were adopted by his successor, Dr Allen Thomson, and have been used in his laboratories for many years. They underwent revision at the hands of Dr Cleland before they appeared in the edition of Quain's Anatomy to which the names of Sharpey, Allen Thomson, and Cleland were attached; but we are by no means sure that such revision gave him the right to ignore his fellow-labourers so completely as he does in the work now before us.

The method of teaching anatomy herein pursued is open to discussion, and has undoubtedly serious defects. A description of the order of dissection is given, and each structure which is to be displayed receives mention, but none of these are described, it being supposed that the student will be able to make out from his dissections the origins and insertions of the muscles, the relations and branches of the arteries, the connections and distribution of the nerves. To a student who is thoroughly acquainted with his subject this will be possible, and will, moreover, be an interesting mode of study; but for the beginner the inevitable result will be the destruction of important structures, and from that will spring disheartenment, which will end in his confining his attention to books and plates, so that the dissecting room will "know him no more."

We believe that it is far better for the student to have, as his companion in dissecting, a book which gives a detailed description of the parts which he sees before him, so that he may be enabled readily to identify them, may compare the

statements of the author with the conditions and arrangements actually found, and thus gain a full and complete knowledge of the essentials of the science of anatomy, instead of merely a general idea of how a dissection is to be made, and what may be seen when it is completed.

As to the order of dissection here given, we cannot think that it is the best that could be devised. The body (after the dissection of the perineum) is first laid upon the face, and the muscles of the back dissected, so that the trapezius, latissimus dorsi, levator anguli scapuli, and other muscles found at the back of the neck, with their accompanying nerves, are divided or removed; on the fifth day the subject is turned, and the dissectors of the head and neck find (perhaps to their dismay) that the posterior boundary and part of the floor of the posterior triangle have been removed, while those of the upper extremities are equally at a loss to find a posterior boundary to the axillary space. But we shall be told the muscles mentioned should not be removed, but simply detached from their vertebral connections; true, but students do constantly remove them, and even if they do not, the muscles are displaced and no longer occupy the proper relative positions. We would suggest as an improvement an arrangement which we introduced some months back, and have found to work admirably; this is as follows:—The perineum is dissected the day the body comes into the rooms; the body is then laid on the back for five days, during which the triangles of the neck, axillary space, axillary artery, &c., receive due attention; at the end of that time the body is turned on the face, and the muscles of the back dissected and removed; this occupies three days, after which the body is again turned, the extremities removed, and the thorax and abdomen dissected.

Dr Cleland has evidently not mastered the details of the method which he advocates, since at p. 69 he describes the dissection of the sub-occipital triangle, and then goes on to say (p. 70), "Should the dissection be completed in the first two days, the dissector may employ the remaining two days, before the subject is *turned on its face*, either in dissecting the brain, if the subject be fresh and it be decided to dissect the brain *in situ*, or in dissecting the orbit." Now the body was already on its face, or the dissector could not get at the *posterior straight muscles of the head*, and in that position he possibly may dissect the brain, and even the orbit, but we cannot think that such a course would be satisfactory, or that Dr Cleland would recommend it.

The introductory chapter on the use of instruments is

worthy of perusal both by students and teachers, for few of the former ever get to handle knife and forceps with that freedom which is essential to good surgery, while the latter are all too remiss in teaching what is after all no important matter.

If we accept the method of teaching anatomy therein set forth as likely to be acceptable and profitable to students, they can have no safer guide than the little work which Dr Cleland presents to their notice, seeing that it is the production of an able anatomist and skilled dissector.

V.—THE GERM THEORY APPLIED TO THE EXPLANATION OF THE PHENOMENA OF DISEASE: THE SPECIFIC FEVERS. *By* T. MACLAGAN, M.D. Macmillan & Co., London. 1876.

In his preface to this work, the author states that "one object which he has in view is to rescue the germ theory of disease from what he considers a false and misleading position, and to give to it its true and legitimate standing as a pathological question." The subject discussed is not whether germs may originate *de novo*, but whether the propagation of germs in the system is competent to produce the phenomena of the specific fevers. These are the maladies whose causation the germ theory is believed to be most competent to explain. The author's view of the germ theory, briefly stated, is, "that the specific fevers are due to the presence and propagation in the system of minute organisms having no part or share in its normal economy."

In chap. II. the nature of contagia is discussed, in which it is postulated that for the production of a specific fever the contagium enters the system by the lungs or alimentary mucous surface; that it is there reproduced to an enormous extent, and results in certain changes in the blood. In relapsing and splenic fever only have foreign organisms been found in the blood, no contagium particles having been satisfactorily proven as present in that fluid in other specific fevers, but such have been found in the tissues in cow-pox and sheep-pox. Hence, the author assumes all contagia as particulate—as living organisms, probably albuminous, capable of organic development, always reproducing their kind, preserving their vitality for a considerable period, speedily perishing when freely exposed to the atmosphere, and so minute as to elude the highest powers of the microscope. If, however, the particles in sheep-

pox, small-pox, and vaccine be the infecting matter, these can easily be seen by the microscope, and ought, therefore, to be found in the blood, but are not.

The author goes on to discuss the relationship of bacteria to diseased processes, and believes that all mycrozymes are not contagia, but all contagia may be mycrozymes. The fact that contagious fluids are most potent in their fresh state, and that their virulence diminishes as bacteria increase therein, is explained by saying that "disease germs are other and more minute organisms than those seen and described as bacteria, and that they are the pabulum on which bacteria live, the latter growing at the expense of the disintegrating elements of the infecting organisms." According to this view we have here anti-infectious bacteria—bacteria which not only do not constitute infection, but destroy it.

Dr MacLagan, after showing the difference of morbid action induced by zymotic and non-zymotic poisons, attempts to prove that all the phenomena of the specific fevers are the result of the organic development of millions of minute organisms in the system. He postulates that "the chief features of the action of an organism on its environment are the consumption of nitrogen and water." A disease germ is a parasite, and requires a special nidus as well as nitrogen and water; the parasite finds a *something* in its nidus which the author calls the *second factor*—the contagium or parasite being the *first*. Without this second factor no bad result follows the reception of the contagium which *per se* is absolutely innocuous.

Different periods of incubation are held as caused by the varying amount of the second factor and the number of germs imbibed. Incubation itself, being caused by germ growth and reproduction, and the onset of the symptoms by a large number of the germs becoming full grown, the author believes that the consumption of nitrogen by the contagious particles is the primary and chief cause of the rapid wasting of the tissues during fever; in other words, the infective organisms live on the albumen or liquor sanguinis, which should go to nourish the body. They also drink largely of water. Dr MacLagan puts great stress on this as a cause of emaciation. This water, he says, is derived from the liquor sanguinis, which, being rich in soda, explains why sodium salts are often absent from the excretions during the febrile state. Retention of soda salts, however, frequently happens in acute symptomatic fevers, which have no relation to infectious disease. Increased elimination of urea is explained thus, "The increased consumption of constructive albumen (liquor sanguinis) caused by the growth of the con-

tagium leads to increased formation of retrogressive albumen and of urea." "The consumption by the contagium of the nitrogen of the constructive albumen leads to the same retrograde tissue changes as would normally result from its consumption by the tissues themselves." According to this view, contagium particles excrete urea, they are therefore animals, and not of the nature of common bacteria, which, as Dr B. Sanderson has shown, are vegetables, because they can appropriate nitrogen from ammonia to build up their protoplasm. Diminished excretion of urea in some cases of specific fever is held as due mainly to consumption by the contagium particles of the water requisite to enable the kidneys to perform their excretory functions. If such be the case, what becomes of the water consumed by the contagium particles? Do they excrete urea with limited water while the patient is unable to do so? Surely the law that applies to the contagious particles may also be applied to the patient. Thirst, dry skin, constipated bowels, scanty and suppressed urine, and emaciation are held to be caused by the contagious particles consuming the water which the system needs, and in fever the quantity of water drank by patients is very great, but that, according to Dr MacLagan, is because the quantity of contagium particles is also very great. We find, however, the same conditions in all syptomatic fevers, while no contagium particles are present. We cannot believe a person's blood could be filled with ultra-microscopic organisms which require several tumblerfuls of water in twenty-four hours to quench their thirst. Increased frequency of the circulation is held by the author to be the result of the propagation of the contagium particles in the tissues. These consume the water and nitrogen due to the tissues, hence an increased supply of blood is sent to supply the want, and hence the patient is thirsty—why not also hungry? As well might the increased circulation arising from numerous other causes be ascribed to contagium particles. The *reductio ad absurdum* is fairly reached when the author comes to explain the cause of the preternatural heat of specific fevers. This is partly ascribed to the propagation of the contagium causing increased consumption of tissue *qua* the contagium, though it is a fact that increase of living matter causes the disappearance of heat, not its production. But he does not end here. He says, "the fecundation of the organisms may be accompanied by an elevation of temperature analogous to that which occurs under similar circumstances in other organisms."

The rigors which mark the onset of idiopathic fever are held to be caused by the minute arteries contracting in order to check the abnormal waste going on by the contagium consuming the

food of the tissues. Headache, convulsions, aching of the back and limbs, feeble pulse, oppressed breathing, and loss of appetite are also held to arise from the same cause. Delirium is said to be caused by greatly impaired cerebral nutrition and increased waste from large reproduction of the contagium, and when this is more excessive coma results, and when greater still, typhoid symptoms, and death may supervene from the whole tissues being greatly impaired. The post-mortem changes observed in the brain and heart are believed to indicate defective nutrition and increased disintegration consequent on the multiplication of the contagium. The cessation of the fever and its specificity are attributed, the first to the organisms as parasites requiring a special *nidus*, which contains a suitable pabulum, and when the latter is exhausted the fever ceases; the second to a local lesion in the *nidus*, which is the part where fecundation of the organism takes place. In small-pox this *nidus* and lesion is in the skin, in typhoid in the bowels, and so on. It is well known, however, that many medicines act on special parts of the body, and yet we do not think of calling them parasites which require a special *nidus*. The author attempts many other theoretical explanations of febrile phenomena by means of the germ theory, which we believe to be more rationally explicable on physico-chemical grounds.

After reading this book very carefully, we prefer Dr Richardson's opinion, that "the current half-popular, ephemeral hypothesis, that contagious diseases are blood diseases, and are due to the growth within the body of living organisms, is the revival of a mere analogical generalization. Applied to any one of the contagious diseases it fails to explain the varied modes of attack, the development of the disease, the nature of the symptoms, the morbid changes, the plan of infection, the mode and cause of death in fatal cases, and the mode and reason of recovery in the large majority of cases that recover."

Exchange Journals.

By DR JOSEPH COATS, Lecturer on Pathology, Western Infirmary.

VIRCHOW'S ARCHIV.

VOL. LXVII, PART III—July, 1876.

CONTENTS.—XXII. The influence of diminished supply of oxygen to the tissues on the decomposition of albumen in

the animal body, by Dr A. Fraenkel, Berlin. XXIII. Anatomical notes, by Dr W. Gruber, Nos. I. to XI. (Pls. VIII.-X.) XXIV. From the institute for pathological anatomy at Rostock, by Prof Ponfick. 1. Further contributions on leuchæmia. 2. Death by rupture of an aneurism of the right gastroepiploic artery, (Pl. XI.) XXV. On the unsuitableness of the silvering process for the histology of the joints, by Dr H. Tillmanns, Leipzig, (Pls. XII.-XIII.) XXVI. Smaller communications. 1. Functions of the internal capsule, corpus striatum and thalamus opticus, by Prof. Nothnagel, Jena. 2. The effect of irritation of the skin on the secretion of urine, by A. v. Wolkenstein, St. Petersburg. XXVII. Extracts and reviews. 1. Primary cancer of the kidney. Inaugural dissertation, by Chr. Fr. Rohrer, Zurich. 2. Hymn to homœopathy, contributed by Stricker.

XXII. The decomposition of Albumen in the body (*Fraenkel*).—This is a very suggestive paper, and the results are of much interest. It is beginning to be admitted that muscular exertion and the other active processes in the body are carried on by means of non-nitrogenous substances. In muscular exertion there is an excessive consumption of oxygen, but it is not followed by any increase in the excretion of nitrogen, so that we are driven to the conclusion that the excess of oxygen is consumed by the non-nitrogenous principles, and that in the first phases of the decomposition of albumen there is no absorption of oxygen. The author believes in fact that the decomposition of albumen, especially under pathological conditions, is related not to active but to degenerative processes. He illustrates this by a variety of experiments, in all of which there is diminished vitality in the tissues, and increased excretion of nitrogen. Thus, increase of temperature, whether induced by placing an animal in a heated chamber or by producing fever, acts deleteriously on the tissues, and there is increased excretion of nitrogen. Then a similar effect is produced by interfering with the supply of oxygen to the tissues, either by destruction of a large proportion of the red blood corpuscles, by elevation of temperature or contraction of the small arteries. Further, poisoning by phosphorous, arsenic, &c., acts injuriously on the tissues, as their degeneration shows, and this is accompanied by increase of nitrogen excreted. You may also increase the nitrogen by increasing its quantity in the food, but here again it is in the condition of dead material. Fatty degeneration is an indication of diminished vitality in the tissues, and it is known to occur with increased excretion

of nitrogen after great loss of blood, or in chronic anæmia. In this case there is diminished supply of oxygen from the deficiency of blood corpuscles. The so-called colloid or waxy degeneration of muscle seen so often in typhoid fever is also the expression of a necrobiotic process.

XXIV. 1. Myelogenous leuchæmia (*Ponfick*).—There are here the records of two cases of leuchæmia, in both of which the medulla of the bones was affected. There was no indication that the disease began in the medulla, but on the contrary in one of them it looked as if the spleen was the original seat of the disease, and that the disease had been set up by the kick of a horse which had injured the spleen. The medulla presents different appearances in different cases of leuchæmia. In some it is yellow or greenish, almost like solidified pus, while in others it is red or brownish. In the former there has been very great cellular hyperplasia, and the blood-vessels emptied by pressure. In one of his cases there were in the medulla actual hemorrhagic infarctions, and as these have been previously observed in the spleen, this places the medulla in a similar position.

XXIV. 2. Aneurism of gastro-epiploic artery (*Ponfick*).—In this case there was pain at a particular point in the epigastrium, exacerbating from time to time. At last there was a severe attack and fatal collapse. The cause was an aneurism of the right gastro-epiploic artery, the size of a pigeon's egg, which exactly corresponded to the most tender spot during life. There was a fresh clot in the abdomen from the rupture of the aneurism. There were other aneurisms in the coronary artery and the superior mesenteric, and an old recurring endocarditis of the mitral valve. There could be little doubt that the aneurisms were due to embolism.

XXV. The use of Nitrate of Silver in examining Tissues (*Tillmann's*).—The author shows that for the examination of the surface of joints nitrate of silver is unsuitable. It forms with the synovia thin membranes which give a false appearance. This of course does not apply to the process in other parts.

XXVI. 2. This author believes that he is able to produce albuminuria by irritation of the skin. It occurs both when the skin is irritated by the application of such agents as iodine, unguentum cinereum, &c., and electric irritation. In the

former case the effect might be due to absorption of the material used, but not in the latter.

PART IV. August, 1876.

CONTENTS.—XXVIII. On the functions of the corpora quadrigemina, by Professor Kohts, Strassburg, (Pl. XIV.) XXIX. On the embolic infarction; from the pathological laboratory at Kiew, by Dr A. Kossuchin, (Pl. XV. fig. 1). XXX. Ontological contributions, by Dr C. Weigert, Breslau. 1. Congenital adeno-carcinoma of the kidney (Pl. XVI). 2. Primary cancer of the liver (Pl. XVII., fig. A and B). 3. A case of secondary cancer of the stomach and intestines. 4. A case of polypoid adenoma of the oesophagus. 5. Congenital teratoma of the orbit, (Pl. XVII. fig. C). XXXI. On the division of nuclei and cells, by Prof C. J. Eberth, Zurich, (Pls. XVIII.-XX.). XXXII. On regeneration, degeneration, and architecture of the spinal cord, by Dr Schiefferdecker, Strassburg, (Pls. XXI.-XXIII.). XXXIII. Smaller communications. 1. Tubercular ulcer of the stomach, by Dr M. Litten, Breslau. 2. Coloboma chorioideæ et retinae inferius circumscriptum, by the same, (Pl. XV., fig. 2). 3. Reply to Prof Virchow, by Dr Lévié, Rotterdam.

XXVIII. The Corpora Quadrigemina (Kohts).—This author first gives a case in which a tumour not larger than a cherry had its seat and its origin in the posterior corpora quadrigemina. It had destroyed these ganglia, and from its small size it could not have produced much disturbance at any distance from them. The principal symptom was an exquisite locomotor ataxy, along with at an early period a strabismus divergens alternans. This latter symptom means that the nuclei of the two oculomotor nerves were early involved, and as these are known to be situated near the middle line in the posterior corpora quadrigemina, this confirms the view that the tumour originated there. This leads to the conclusion that these ganglia are concerned in co-ordination of movements. In addition to the tumour of the corpora quadrigemina, there was a cyst in the cerebellum, but the author judges that the former was the primary and that the original symptoms mentioned above were due to it. He has followed out the subject by experiments on animals, and concludes that in frogs the optic lobes which correspond to the corpora quadrigemina are the

centres for the retention of equilibrium. The posterior corpora quadrigemina are the organs of co-ordination of motion in these animals. From the relation in position of the corpora quadrigemina to the tegmentum, it may be that injury to the former produces ataxy by interfering with the latter, which is, according to Meynert, a reflex tract having its origin in the thalamus and corpora quadrigemina.

XXIX. The Embolic Infarction (*Kossuchin*).—This author agrees in the main with Cohnheim in his views of the results of embolism, and his experiments like Cohnheim's are mainly on the tongue of the frog. He ascribes, however, much more to the collateral hyperæmia which supervenes on the obstruction of an artery, and he states that the engorgement and hemorrhage are due to this collateral hyperæmia, which produces excess of pressure in the vessels of the part.

XXX. Various Tumours (*Weigert*).—These cases are all of interest, but do not call for any very special remark.

XXXI. The division of Cells and Nuclei (*Eberth*).—This is a very useful and elaborate paper. It is based on the study of the epithelium and other cells of the cornea of the frog and rabbit, chiefly during the process of regeneration after removal of the epithelium. He compares his results with those obtained by Strassburger in plants. He finds that when division is occurring the nucleus gets beset with granules or fibres, and that these ultimately form the new nucleus. The substance of the old nucleus proper does not seem to concern itself in the formation of the new one, which is all composed of these new elements. The paper is accompanied by a large number of illustrations, and may almost be read by them, and the description of them.

XXXII. The Architecture of the Spinal Cord (*Schiefferdecker*).—If the views enunciated in this paper turn out correct, it is no doubt a very important contribution to our knowledge of the structure of the cord. The results are based on the anatomical investigation of the cord in a large number of dogs in whom the cord had been cut in the neighbourhood of the tenth dorsal to the first lumbar vertebræ. The physiological side of these experiments has been studied by Goltz and Freusberg, here the anatomical. The animals generally recovered from the operation and lived various lengths of time, some of them more than a year. As to regeneration, it appeared

that in dogs at least there is neither union of the nerve fibres, nor regeneration of them after division of the cord. The divided cord is united by connective tissue, and the two cut ends fit into the uniting medium like acorns into their cups. This is consistent with what has been found in mammalia by other observers, and a similar non-existence of regeneration has been found in reptiles. It is asserted, however, by Brown-Sequard, that regeneration occurs in pigeons.

Of much greater interest for the general structure of the cord are the observations on *degeneration* after section. It is well known that when the conduction of the cord is interrupted, the parts seated above and below undergo certain degenerative processes. That is to say, the white substance in certain regions loses its nerve fibres and assumes a grey colour. In these observations the results were perfectly uniform and consistent, and it appears that while, after division of the cord, the greater part of the white substance remains unaffected, yet there are certain areas which uniformly undergo changes, these areas being different in the cord above the section from those in the part beneath. In the part above the cut there are two areas of degeneration, one situated in the posterior columns, where the two opposite sides form in transverse sections a triangular surface, and the other on the surface of the posterior parts of the lateral columns where it forms an elongated ribbon-shaped area. Immediately above the section the posterior columns are completely degenerated, but the extent of degeneration here, as well as in the lateral columns, diminishes as we pass upwards; but both can be followed up to the medulla oblongata, where they are of nearly the same relative size to each other as at first. In the cord beneath the section the degeneration is much less distinctly localized, there being little groups of degenerated fibres scattered throughout the anterior and lateral columns, the only approach to continuity being on the surface of the anterior columns.

On a careful examination of the extent of degeneration in the cord above the seat of section, certain interesting results were obtained. The areas, both in the posterior and lateral columns, diminish rapidly at first, a diminution occurring at each nerve entrance. But after the first few nerves, the diminution occurs only at certain intervals, the areas remaining the same over several nerves to undergo sudden diminution at certain points, the points corresponding for both the posterior and lateral columns. This means that there are in the cord two centripetal tracts of fibres, which from time to

time send a portion of their fibres into the grey substance, and finally enter the medulla oblongata with, proportionately to each other, a similar number of fibres. The grey matter of the cord is doubtless composed of numerous centres, and these centres are of different orders of advancement. Those of the first or lowest orders will be directly connected by the nerve fibres with the organs to which the nerves go, while the successively higher orders will have more and more complex connections. And now it is to be observed that looking to the degenerated fibres above the section of the cord, the number of fibres diminishes rapidly at first, at each nerve entrance, as if fibres passed here into centres of a low order. Whereas higher up the fibres, coming longer distances, pass into centres at wider intervals, these centres being of higher orders. The question arises, whence come these two strands of centripetal fibres which are thus shown to exist in the posterior and lateral columns? Do the nerve fibres in them pass directly from the posterior roots of the nerves, or do they first pass through the grey substance? These questions cannot be answered by the observations before us, but a probable answer is given by a case recorded by Lange. In this case, a tumour occupied the lower part of the spinal canal and compressed the cauda equina, so that the posterior roots of the nerves were atrophic. In this case the entire posterior columns in the lumbar region of the cord were degenerated, while the grey matter was normal. The conclusion seems obvious that the posterior columns are composed of fibres which pass directly from the posterior roots to these columns. On the other hand the strands represented by the degenerated fibres in the lateral columns come immediately from the grey substance. So that it would appear that the posterior roots divide into two sets of fibres. One of these passes directly to the posterior columns of the same side where it runs, giving up fibres into the grey substance of the cord at intervals, while some fibres pass on to the brain. By these posterior columns the various higher centres are thus brought into direct relation to the periphery of the body, and hence probably the importance of the posterior columns for the due co-ordination of movements. These fibres will carry information as to fine differences of size and exact position (tactile sensations). The other set of fibres from the posterior roots pass to the grey substance, and fibres pass thence to the lateral columns of the opposite side. Through this set of fibres impressions of pain as distinguished from those of touch will be carried, and it is well known that painful impressions cross in the cord, and also that such impressions may be carried by the grey matter alone. The

probability is that the parts of the lateral columns concerned and the grey matter may each take up the function of conducting these impressions. As to the ganglion cells in the cord, the author believes that in addition to the cells concerned in reflex actions there are what he calls conducting cells. Some of these are bipolar, and are probably of use in strengthening impressions on their way to the centres. He seems to think that the cells in the ganglia of the posterior roots which are mostly bipolar have chiefly this function, and probably they are connected with the fibres which pass directly to the posterior columns. Others of these conducting cells which are multipolar may have the function of gathering up various impulses to forward them in one direction, or of dividing an impulse and sending it in various directions.

The fibres which degenerate in the cord beneath the point of section are centrifugal. It seems to be the fact that none of the centrifugal fibres in the cord run directly to the anterior roots, but all pass first to ganglion cells in the grey substance. When nerve fibres are cut they only degenerate when they are functionally inactive, that is, when they are cut off from the conduction of impulses or impressions. A great part of the fibres in the cord seem to be engaged in forming communications between the various orders of centres. Some of these "commissural" fibres will conduct from centres of a higher order to those of a lower, while some will form communications between centres of the same order. In the former case the conduction will always be in one direction, whereas in the latter, the probability is that impulses will pass indifferently in both directions. Division of fibres of this latter kind will in no case cut off the fibres from ganglion cells which are in functional connection with them, and they will not degenerate. In some such way may be explained the fact that only isolated groups of fibres degenerate in the part of the cord beneath the section.

XXXIII. 1. In this case there was a tubercular ulcer in the stomach, but none in the rest of the alimentary canal. There were tubercular ulcers in the larynx, bronchi, and lungs.

XXXIII. 2. The coloboma was found on microscopic examination to contain no trace of the tissue of the retina or choroid, but to be made up of fibrillated connective tissue.

VOL. LXVIII. PART I. OCTOBER, 1876.

CONTENTS.—I. On hydromyelus and syringomyelia, by E. Leyden, Strassburg, (Pl. I.). II. Participation of the sympathetic in cerebral hemiplegia, by Prof H. Nothnagel, Jena. III. Investigations on the functions of the brain. Part 5. The cerebellum, by the same. IV. On the formation of giant cells, or epithelioid cells which form around foreign bodies in the organism, by Dr G. Weiss, Padua, (Pl. II.). V. The innervation of the tensor tympani, by Dr A. Politzer, Vienna. VI. Are we justified in giving the groups of symptoms called “athetosis” a separate name? by Dr O. Rosenbach, Jena. VII. The origin of the spermatocoele, by Prof. M. Roth, Basle, (Pl. III., fig. 1-3). VIII. Contributions to the pathology of the central nervous system, especially the spinal cord, by Dr Fr. Schultze, Heidelberg, (Pl. III., fig. 4-5). 1. Leptomeningitis acuta tuberculosa cerebrospinalis. 2. The relation of paralysis agitans to multiple sclerosis of the cord. 3. On infantile spinal paralysis and similar paralysis in adults (poliomyelitis acuta anterior).

I. Hydromyelus and Syringomyelia (*Leyden*).—

By the former of these names is meant an accumulation of fluid in and dilatation of the central canal of the spinal cord, the condition being comparable with the dilatation of the ventricles in hydrocephalus. This condition is mostly congenital, although it is met with also in adult life. It has been met with in some cases where no symptoms existed during life, and again in other cases where there seemed reason to believe that it had existed long, but spinal symptoms had only been of recent occurrence. The explanation of these latter cases seems to be that the condition may grow slowly or exist long in a stationary condition without producing symptoms, but may come to increase more rapidly. The other condition named in the title, is that in which there is an apparently abnormal canal filled with fluid existing in the length of the cord. It is met with in adults, and the canal may have no obvious connection with the central canal. But most authors believe that the syringomyelus has developed out of a hydromyelus, and the two cases described in this paper favour this view. It may not be a uniform dilatation of the canal, but a dilatation more in one direction than another, so as to give the impression as if it were not the canal at all which is affected. An appendix is added by Waldeyer on the development of the central canal of the cord.

II. Condition of the Sympathetic in Hemiplegia (*Nothnagel*).—It is well enough known that in the limbs of hemiplegics there are frequently affections of the vessels which indicate that the sympathetic fibres are affected, but it is not generally understood that the branches of the sympathetic from the cervical ganglia may be also involved in hemiplegia. Certain cases are recorded in which with hemiplegia there was a partial ptosis with contraction of the pupil on the paralyzed side, without any other condition which could be referred to the third nerve. In a case by the author there were not only these conditions, but also a withdrawal of the eyeball within the orbit so that it looked smaller, an increase of temperature in the corresponding side of the face and head, and an abnormally abundant secretion from the eyes, nose, and salivary glands. All these are symptoms of affection of the sympathetic in the neck, and they show that the fibres which run through it may be involved in hemiplegia of cerebral origin. The course of these fibres is not known.

III. Functions of the Cerebellum (*Nothnagel*).—This paper contains the results of experiments on rabbits, and the experiments were of two kinds: in one the cerebellum was mechanically irritated by a needle, and in the other portions of it were destroyed by the actual cautery. Irritation produced movements of the body first of the opposite side and then of the same. The fact that first the one side of the body and then the other was moved, seems to show that there is some intimate internal relation between the two halves of the cerebellum. The results of destruction of parts are very curious. Destruction of one or both hemispheres alone, or of the upper and anterior parts of the vermiform process alone does not produce any affection of co-ordination. But when in the substance of the organ the connection between the vermiform process and a hemisphere is disturbed then there is defective co-ordination, but no proper paralysis. The organ is therefore related to motion in some way and to the co-ordination of movement, but the exact relation seems obscure.

V. The Innervation of the Tensor Tympani (*Politzer*).—This author has previously asserted that this muscle receives its nerve fibres from the motor part of the fifth, and he came to this conclusion on the ground that, on killing an animal and removing the brain, the muscle contracts on gently irritating the motor branch of the fifth, but not the facial. Voltolini contradicts these results and says, on the

ground of similar experiments that the muscle receives fibres from the facial as well as the fifth. But the author points out that in his experiments, Voltolini used too strong a current, and that the contraction was due to diffusion of the current. The nervus stapedii belongs to the facial.

VII. The Origin of Spermatocetes (Roth).—He agrees with Virchow in the view that most spermatocetes and especially the larger ones take origin in vasa aberrantia or Wolff's diverticula, and are therefore terminal or end cysts.

VIII. 1. Tubercular Meningitis affecting the Cord (Schultze).—In a former paper he has ascribed the muscular rigidity and anæsthesia in the regions of the spinal nerve to the spinal meningitis, which generally goes along with the basal meningitis of hydrocephalus acutus. These symptoms depend chiefly on irritation of the nerve roots by the inflammation, and this condition can be proved anatomically. The cord itself may be involved by the inflammation. There is a further case given here in which the anatomical results seem hardly accordant with the clinical symptoms.

VIII. 2. Paralysis Agitans. There is here recorded an undoubted case of this disease, yet on *post mortem* examination, there was diffuse sclerosis. Charcot has rigidly separated these two diseases, but this case shows that although this is generally correct, yet it is not universally so.

VIII. 3. Infantile Paralysis. In the author's case there were pathological changes, due to an inflammatory process in the grey substance in its anterior or motor parts. This existed on both sides in the lumbar swelling, but in the right anterior cornu in the dorsal and lower cervical regions.

PART II. OCTOBER, 1876.

CONTENTS.—IX. On ataxia with special reference to the hereditary form, by Prof N. Friedreich, Heidelberg. X. On the thermic action of experimental injuries to the nervous system and their relation to the vaso-motor nerves, by A. Eulenburg and L. Landois, Greifswald, (Pl. IV.) 2. The thermic action of localised irritation and destruction of the surface of the brain. XI. Anatomical notes, Nos. I.-IV., by

Dr W. Gruber, (Pl. V.). XII. Smaller communications. 1. Affection of the medulla of bone in pernicious anæmia, by Prof Cohnheim, Breslau. 2. A case of renal calculus, by Dr E. Mendel, Pankow. 3. A plea for general statistical determination of the relations of menstruation, by Dr W. Stricker, Frankfort. XIII. Extracts and Reviews: J. H. Baas, Elements of the history of medicine and medical men, by Dr W. Stricker.

IX. On Ataxia, chiefly its hereditary form (*Friedreich*).—This author is well known in connection with the subject of locomotor ataxia. In a former paper he described six cases which presented certain peculiarities that induced him to place them in a separate class. He here completes the history of some of these cases during the thirteen years that have elapsed since the former publication, and he gives three new ones. He calls this form hereditary ataxia, not because parents and children present this disease, but because it so frequently shows itself in several members of the same family, and must therefore be due to some hereditary influence. The three new cases for instance are in three sisters. It will be convenient to refer to the symptoms of this form, especially in those points where they differ from those of ordinary ataxia. There are the usual symptoms of locomotor ataxia, but in certain cases generally at an advanced stage, there is a condition which he describes as *static ataxia*. An ataxic patient can generally stand still when his eyes are open, or he can hold out his hand or foot steadily. But in these actions of standing or holding out the arm, there are complex muscular actions involved, and in some cases the ataxia involves these as well as movements. The outstretched hand moves about, and in standing the body sways in a rapid irregular fashion. This static ataxia is different from the condition so often seen in locomotor ataxia when the eyes are closed, and it is not aggravated by closing the eyes. In the hereditary form of ataxia sensation seems much less affected than in the ordinary form, and in fact such affection of sensation is usually altogether absent or of late occurrence. In the three new cases there was no dulling of sensation, and no disturbance even of the muscular sensibility. They could tell the position of the limbs with the eyes shut, and could direct them to any desired position as well as the badly co-ordinated movements would allow. They could also distinguish fine differences of weight, and could retain themselves in the erect posture with the eyes shut. As minor differences

it may be mentioned that hereditary ataxia appears to affect preponderatingly the female sex, seven out of the nine cases being females, and that it occurs at an earlier age than the ordinary form, beginning usually about puberty, whereas the ordinary form seldom occurs before thirty.

This hereditary form of the disease seems to spread pretty rapidly through the whole length of the cord, while the ordinary form generally proceeds more slowly, but has a greater tendency to extend transversely through the thickness of the cord. The hereditary form also rarely passes beyond the medulla oblongata, no cerebral symptoms being observed in any of the cases. But it generally spreads pretty early to the medulla oblongata, this being consistent with its rapid extension along the length of the cord. There are certain symptoms of nearly constant occurrence and referable to an affection of the medulla oblongata, but which are not usually present in the ordinary form. The first of these is an affection of the speech, due apparently to imperfect co-ordination of the muscles of articulation, by which a sort of slovenly pronunciation of words is produced. Another is nystagmus, which is commonly a later symptom and is usually bi-lateral. Nystagmus hardly occurs in ordinary ataxia, it is not even mentioned by Leyden among the symptoms. The nystagmus in hereditary ataxia is really an ataxia of the muscles of the eye, and it is exaggerated when the muscles are called upon to exert themselves more definitely and vigorously as when looking at a near object. It is most obvious when the eyes are moving, but is also present when they are fixed especially in looking at a near object, so that there is a static as well as a locomotor ataxia. This form is different from ordinary nystagmus, both in respect that the structure of the eye is perfect, and that it is exaggerated when a near object is looked at. Nystagmus is pretty common in the sclerosis in patches of Charcot, where it is probably ataxic though it has not been specially investigated with this view. The other symptoms related to the medulla oblongata in hereditary ataxia are polyuria, salivation and sweating.

These cases as well as some others are of great importance in relation to the condition of sensation in ataxia. The author does not place much confidence in fine methods of testing sensation such as that of Weber, chiefly because the persons experimented on are mostly not in the habit of interpreting fine differences in sensation. For the most part sufficient information can be got by pricking with needles and such simple contrivances. Ataxia has been frequently supposed to

depend on deficiency of sensation, but this view is erroneous. There are these hereditary cases, and some others in which sensation is not involved, and yet ataxia is typically present. But there are also cases of complete anæsthesia without a trace of ataxia. [The reporter would here observe that supposing the co-ordinating centres to be in the cerebellum and corpora quadrigemina, anæsthesia might depend on interruption of sensory fibres going to or in the cerebrum itself, which is presumably the seat of sensation, and in such case the co-ordinating centres would remain connected with the periphery.] The author believes that if sensation is involved, it is because the grey substance or the posterior roots have been attacked by the disease. The co-ordinating centres are in the cerebellum, corpora quadrigemina, cerebral peduncles and pons, and they seem to form an elaborate system of ganglionic elements. These centres he believes communicate with the centres in the cord through the posterior columns, which he would thus make out to be composed of centrifugal fibres. It seems strange, however, that fibres which are directed to the motor ganglia of the anterior cornua should be situated in the posterior columns.

When an impulse is originated by an effort of will to perform a certain movement, the course of events seems, according to the author, to be this: A centre in the cerebrum is brought into action, and an impulse is sent to the spinal cord to call forth the action of the muscles, while through another set of fibres the co-ordinating centres are awakened up to regulate the movement. These centres also transmit their impulses to the cord. Ataxia may, according to this view, be theoretically produced in three different situations—by an interruption of the communications between cerebrum and co-ordinating centres—by a lesion of these centres—or by an interruption between the co-ordinating centres and the cord. Thus we may have a cerebral, cerebellar, or spinal ataxia. The cerebral form is not definitely known to exist. It was at one time thought that the ataxia which often supervenes in general paralysis was due to interruption between the cerebral centres and the co-ordinating ones, but recent observations seem to show that in these cases the posterior columns of the cord are affected. In regard to the cerebellar form [to which should be added that resulting from lesion of the corpora quadrigemina] there is no doubt that though there are cases where affections of the cerebellum produce no ataxia, yet cases occur where they do. The spinal ataxia is, of course, the more common form, and in it the posterior columns of the cord are degenerated.

The author has a final section on the use of nitrate of silver in ataxia. He has given it often, and in many cases with no good result. In two cases, however, it was markedly beneficial, and should probably receive a trial in all. During administration the urine should be carefully watched, as in two of the author's cases the silver salt seemed to set up chronic nephritis. He now tests the urine for albumen every second day during administration.

X. Influence of the Nervous System on Temperature (*Eulenburg and Landois*).—This is the continuation of the investigations referred to in this Journal for October, 1876, p. 560. In the present case the authors observed the effects of localized irritation and of destruction of the surface of the brain, especially in dogs. Destruction of certain parts of the surface of the anterior part of the brain in dogs, produces immediately a rise in temperature in the extremities of the opposite side, which may reach 13° C., but may be only 1.5 to 2° . The temperature may vary in the two extremities, this depending on the seat and extent of the part destroyed. The parts of the brain whose destruction causes elevation of temperature, correspond to the regions which have been determined by Hitzig and Fritsch to contain centres for the hind limb and the flexors and rotators of the forelimb. The same destruction which produced elevation of temperature produced as a rule disturbance of motion in the limb opposite the lesion. This indicates that the parts of the surface which affect the temperature are in the immediate neighbourhood of those related to motion. An absolute identity in situation, though probable, is not certain. The duration of the rise in temperature is variable, but it may last as long as three months. Localized irritation of the surface of the brain by electricity with a weak current, or by chemical agents, as common salt, produces a slight fall of temperature in the extremities of the opposite side, and this occurs in curarised animals as well as others. It could not be determined whether the temperature of the head was similarly related to certain parts of the brain.

XI. 1. The Medulla of Bone in Pernicious Anæmia (*Cohnheim*).—The pathology of this mysterious disease, in which, without any loss of blood or apparent cause, the patient is the subject of a profound and usually fatal anæmia, is quite obscure, but Cohnheim records here an anatomical condition not previously observed. He found that the medulla

of all the bones, in contrast with the organs generally, which are exceedingly pale, was of a deep red colour. On microscopic examination the medulla was seen to contain no fat cells, but two kinds of elements. In the first place there were colourless cells of various sizes, very few of them containing red blood corpuscles. But most peculiar were the coloured cells; a few were like ordinary red blood corpuscles and some were globular, but the majority were nucleated and about the size of the smaller epithelioid medullary cells. The blood had been examined during life, but though it presented the usual small red corpuscles between the ordinary ones, no nucleated red corpuscles were seen. In the blood after death, however, such cells were not very infrequent. The author only records this as an isolated observation, and asks those who have the opportunity, to observe the medulla of bone in pernicious anæmia.

TRANSACTIONS OF The Medico-Chirurgical Society.

SESSION 1876-77.

SIXTH MEETING, 20th December, 1876—Dr Watson, President, in the chair.

Professor Sir William Thomson, F.R.S., this evening delivered a lecture to the society on the "Diffusion of Liquids and Gases." After an appreciative reference to the labours of Graham, especially in regard to the diffusion of fluids by endosmose, the lecturer proceeded to illustrate the diffusion of liquids without any septum intervening. The point which he desired especially to bring out was the marvellous slowness of this process in the case of liquids, and its rapidity in the case of gases. To show this he exhibited the results, as far as they had gone, of two secular experiments on the diffusion of liquids. He had filled on 29th November, 1870, and 14th December of the same year, two long tubes, the lower half with water and the upper half with alcohol coloured red with cudbear, and had then hermetically sealed them. He pointed out to what a comparatively small extent diffusion had taken place during six years, as indicated by the extension of the cloudy stratum of coloured liquid downwards into the

colourless water. In passing, the lecturer mentioned that a neater and more satisfactory form of the experiment would be to enclose the liquids in a prismatic tube, so that they might be separately identified by their different powers of refracting light. He also drew special attention to the considerable amount of shrinkage which occurred as the process of diffusion went on. In one of the tubes this shrinkage was .70 inches and the other .67 inches during the six years in which the experiment had continued. This matter of shrinkage from diffusion of liquids of different density was one, as far as he was aware, not touched in the text-books. After adverting to the length of time which would elapse before the experiment would be completed, Sir William stated that he had in the University Laboratory experiments in process which instead of "secular" might be called "millennial," as perhaps two thousand years would be required for their completion. He had filled two great tubes, 25 feet in length, one with coloured water and alcohol, and another with solution of sulphate of copper and water. At the bottom of the latter tube he had placed crystals of the salt, so that the lower part of the solution would be kept in a state of continual complete saturation. The lecturer next proceeded to point out that, marvellously slow as the process of the diffusion of liquids was, if they were left to the unaided action of the natural law of diffusion, it was very easy so to expedite the process that the work of centuries might be done in half a minute. This was effected by simply reversing the tube several times so as to bring the particles of the two liquids into contact. If this were done very slowly, it was possible that by the heavier liquid flowing under the lighter they might change places in the tube without much visible diffusion. But the repetition of the operation brought about complete diffusion, and the total amount of shrinkage could then be measured. Sir William next adverted to the process of diffusion of gases, and showed by a modification of Graham's experiment of diffusion through a porous septum how extremely rapid the process is. He pointed out that according to the Kinetic theory the difference depended upon the nearness to each other of the ultimate molecules or atoms of the liquid, as compared with the mutual distance of the molecules of the gas. In the latter case the molecules had the utmost facility of motion which those of the liquid had not. As illustrative of this point, the lecturer took the hypothetical case of a field of sheep, the individual members of the flock being uninfluenced by any consideration but that of going about the field to graze. At the commencement the sheep in one half of the field were branded red, and those in the other black. The diffusion of the red sheep among the black would follow a fixed law, and the extent of it at different intervals of time would be a matter of statistics—an actuary could calculate it. The rate of diffusion would depend very materially on the number of sheep in a given space. If closely packed, like the molecules in water, the diffusion would be slow, if so wide as to have perfect freedom of motion, like the molecules of gases, then it would be proportionally rapid. Sir William concluded by

referring to the diffusion of gases through liquids, and in this connection adverted to the now well-known experiments of Dr Fergus in reference to the passage of sewer gas through drain traps. On the motion of Dr Joseph Coats, a cordial vote of thanks was awarded to the lecturer.

SEVENTH MEETING, 5th January, 1877—Dr Watson, President, in the chair.

Dr Cassells read a paper entitled,

“SHUT YOUR MOUTH, AND SAVE YOUR LIFE,”

being remarks on Mouth-breathing, &c.

Dr Hugh Miller said that in regard to the experiments mentioned by Dr Cassells on new-born children, he (Dr Miller) had experimented to a certain extent on four children. He had opened their mouths, and stopped the nasal passages, with the result of causing the child to struggle for breath to such a degree that for the sake of safety he had to stop the experiment in about a couple of minutes. He could not absolutely say that breathing would have eventually been arrested, but such was his impression. It was obviously a kind of experiment which could seldom be had resort to, and required great caution in the experimenter.

Dr Morton complimented Dr Cassells in having to some good purpose violated the precept which constituted the title of his paper. The sanitary purposes subserved by the nose suggested the thought that in some cases these purposes would be much better carried out than in others. In fact, the character of the nose in respect of length, extent of mucous surface, &c., would necessarily determine its efficiency and utility in a sanitary point of view. He was not in a position to say anything in regard to the effect of mouth-breathing on the hearing; but he thought Dr Cassells deserved credit for having to some extent broken new ground on this subject.

Mr John Reil said that he regarded Dr Cassells' ideas on the subject as perfectly visionary. The fact was undoubted that both mouth and nostrils were intended to be used as respiratory passages. Some animals breathed more through the nostrils than the mouth, while others did the reverse. This was also true in regard to the human species; but he had yet to learn that the former were any longer lived, or had more acute hearing than the rest of mankind. Old people, as a rule, were mouth-breathers. He had observed also that those who were dull of hearing generally opened their mouths, as though with a view to make them hear better. He had strong doubts of the accuracy of Dr Cassells' physiology on this subject. That air was admitted into the tympanum in the periodical way Dr Cassells stated was, to say the very least of it, more than doubtful. That it was constantly renewed in the way described in the paper he did not believe; nor did he think that the habit of mouth-breathing at all conduced to disease of the external ear. The simple experiment of shutting the mouth and holding the nostrils firmly, so as to produce a forcible effect on the membrana tympani, had been tried for long, and no better experi-

ment had been produced by a modern aurist. So far from a new born infant being unable to breathe through the mouth, the very first beginning of the respiratory process in a child was a gasp—that was, a breath by the mouth.

Dr Charteris said that he was of opinion that the habit of nose-breathing was hereditary. But to give the discussion a more practical turn, he might mention that he had not long ago reported two cases of diabetes, in which the symptoms were abated by the breathing through a respirator. Whether all diabetics breathed through the mouth was open to question, but he noticed that the mouths of such patients were generally very dry. By breathing through the respirator his patient's mouth became normally moist, and ultimately he breathed through the nose.

Dr Bell said—With regard to *Dr Cassells'* interesting paper, he might observe that, in regard to the new-born infant, the lungs could not be inflated simply through the nose. There could be no doubt, however, that breathing through the nose appeared to be essential to good health, and especially to the health of the organ of hearing. There must be a free ventilation of the cavity of the tympanum through the Eustachian tube; and by the air passing through the nares it was warmed, and the chance of aural catarrh thus lessened. In regard to medical men, the nose served the very necessary function of diminishing the chance of infection in disease. The nose, in fact, acted as a sieve, and he was satisfied that by breathing through the nose contagia could in this way be kept out of the system.

Dr Hugh Thomson said that he had been very much surprised to learn that a new-born infant could not breathe through the mouth, and he should like further observation on the subject. It did appear somewhat surprising that such a *natural* habit as that of breathing through the nose, as *Dr Cassells* made it out to be, was one, if not difficult to acquire, it seemed very easy to leave off. At the same time, he could not see how breathing through the nose could have the beneficial effect attributed to it, as far as the Eustachian tube was concerned. That tube must be more exposed to the air passing through the nostrils than that breathed by the mouth; and therefore if cold air was what did the mischief, mouth-breathing appeared the preferable habit. But, again, in regard to the Eustachian tube, *Dr Cassells* had given them new physiological facts. The ordinary text books told them that the Eustachian tube was permanently closed, excepting at special periods, such as the act of deglutition, yawning, &c. The ventilation of the tube by nose-breathing, if this were the case, was impossible. No doubt there must be equilibrium between the air on the inside and the outside of the ear. But the degree of tension of the tympanum required was very easily adjusted. With regard to the exemption of the Indians from diseases of the ear, it must be remembered that from the exceedingly dry atmosphere of the North American Continent catarrhs were comparatively rare, even in the Eastern States. The absence of coughing in church struck Europeans in visiting America. In regard to the Indians, he presumed that in running, to which they had often recourse, they opened the mouth; to keep the mouth shut in rapid running would be difficult, if not impossible.

After some words from *Dr Murdoch Cameron*,

Dr Joseph Coats thought that *Dr Cassells* had perhaps ridden a favourite

hobby too far. With regard to new-born children, he had stated that they were unable to breathe through the mouth; but even granting that the observations made were accurate, did they prove Dr Cassells' position? Several things must be taken into consideration in endeavouring to find the exact significance of such an experiment as Dr Cassells had described. A new-born child was made up to a large extent of reflex actions, and it was quite possible that by holding the nostrils of the child its nervous system might be so affected as to give rise to the phenomenon witnessed by Dr Cassells. The result might be due, not to simple obstruction of the nostrils, but to reflex action. The nervous system of an infant was unable momentarily to adapt itself to new reflex action. The stoppage of the nostrils in the experiment arrested respiration; but it might have done so indirectly through the nervous system, and not directly by excluding the air. Experiments of that kind were liable to lead to erroneous conclusions, unless great care were used in drawing the inference.

Dr Alexander Patterson said that a child recently born would catch the nipple; and in the act of sucking respiration behaved to be chiefly through the nose.

Dr Kirk said that in order that the experiment should be valid, it would be necessary that the counter experiment of keeping the mouth shut from the first should be tried. It would be seen if this prevented the muscles from acting.

After a few words from *Dr Perry* in regard to what he thought the "sensational" title of the paper,

The President said that the discussion to which the interesting paper of Dr Cassells had given rise brought out the advantage of such meetings. No one who read a paper could object to his views being criticised. In regard to Dr Cassells' main position, he might draw attention to the fact that there were whole classes of compulsory mouth-breathers, such as persons with cleft lip and cleft palate. These persons were usually acute in hearing, and their general health did not appear to be affected by the somewhat abnormal conditions of their respiration. He must observe also, as a physiologist, that he was not aware of the function of what Dr Cassells called the "tube-muscle." The Eustachian tube was, as a former speaker had truly stated, permanently closed, and opened only occasionally as in the act of swallowing. The palato-pharyngeus muscle had nothing to do with the tube. The opener of the Eustachian tube was the cartilage. With throat diseases he (*Dr Watson*) had much acquaintance, and he could testify that there could be a great deal of throat disease without any ear disease. Spray-breathing, also showed that mouth-breathing carried the air very directly to the lungs. In regard to the claim put forward for the nostrils to be the only proper channel for respiration, he could not admit it. Nor could he see how the entrance of infection could be stopped more by nose than by mouth-breathing.

Dr Cassells, in reply, said that he welcomed all legitimate criticism on the paper. He had not adopted his view on this subject without due consideration. He had assumed nothing to be true till by observation and experiment he had proved it to be such. The arresting of respiration by

holding the nostrils of a new-born child was a scientific fact, which could be proved experimentally by any one of them. With regard to the deduction from it, he had not overlooked the possibility of the result being due to reflex action. But if they considered that there were cases of children being all but suffocated by mucus in the nostril, the conclusion appeared to be that the stoppage of the air was the direct cause. With regard to the hypothesis he had advanced, he would state that a long series of observations confirmed him more and more in his belief of its truth. The day was not far distant when, by the general acceptance of it, the study of aural surgery would be rendered as simple as that of any other part of medical science. In his own practice success had attended him when he assumed its truth, and non-success when he had denied it. The question had been put to him that evening whether tubercular and bronchitic people were dull hearers. He could only say that not a few cases of tubercular disease which he had seen were affected in the ears by the changes in the nasal passages. Dr Thomson was wrong in assuming that the Indians ran with open mouth. The contrary was, as was well known, invariably the case. With regard to the climate of America generally, he might remark that in the Eastern States ear diseases were very prevalent. No country had more aural surgeons than the United States. In the Western States, among the Indians, ear disease was unknown. With regard to the muscles of the Eustachian tube, the point at issue between the President and himself was a matter of students' information, and his accuracy would be verified by looking up the later authorities on the subject. The fact of the permanent closure of the tube was also now called in question, but it was sufficient for his argument that it was open in the act of swallowing. In his own practice he had never had a case of split palate without, as a concomitant, either defective hearing or tissue changes of long standing going on in the ear.

EIGHTH MEETING, 2nd February, 1877—Dr Watson, President, in the chair

The following gentlemen were admitted members of the society:—Mr Johnstone Macfie, M.B.; Mr James W. Anderson, Surgeon, both of Glasgow; and Dr Adam Gilmour, Duntocher.

Mr Henry E. Clark read a paper by Dr William MacGregor, of Fiji,
 "ON A NEW FORM OF PARALYSIS ASSOCIATED WITH THE PRESENCE OF A NEW
 PARASITE OF THE LIVER."

Mr Clark further showed specimens under the microscope, and drawings of the parasite, which was stated to be the *Distoma lanceolatum*. (See page 3, *January number of this Journal*.)

Dr John Dudgeon, of Pekin, China, read a paper

"ON THE DISEASES OF CHINA AND THE WEST CONTRASTED, WITH REMARKS ON THE PREVENTIBLE OR INDUCED DISEASES OF MODERN EUROPEAN LIFE." (See page 174 of *this number of the Journal*.)

No discussion followed the reading of these papers.

NINTH MEETING, 2nd March, 1877—Dr Watson, President, in the chair.

Dr R. Kirk, Partick, read

“CASES OF SCARLATINAL DROPSY, ILLUSTRATING THE TREATMENT OF ITS MORE SERIOUS OCCASIONAL RESULTS, AS CONVULSIONS, PULMONARY ŒDEMA, ETC., BY BLOODLETTING.” (*See page 145 of this number of the Journal*)

Mr John Reid said that, apart altogether from the theoretical views of Dr Kirk in regard to vascular action, the importance of his paper rested on the treatment which he advocated. The facts of these cases spoke for themselves, as the treatment had been successful, and, therefore, inferentially proper. Like Dr Kirk, he had bled in very many cases of convulsions and the sequelæ of scarlatina, and with excellent results. He held that all inflammatory cases must be benefited by bleeding more or less, according to the strength of the patient. But confining himself to the sequelæ of scarlatina, it was quite common, in a kind of blind way, to treat anasarca, with an albuminous state of the urine, by diuretics. Most of these cases could be traced to cold, causing a determination of blood to the kidneys. To give diuretics in such a state of matters at the commencement was simply to increase the mischief by exciting the vascular action of the kidneys. The very reverse of such a line of treatment was clearly indicated. Bleeding in such cases was generally successful.

Dr Barr said that in acute Bright's disease he had rarely resorted to bleeding, preferring to have recourse to vicarious treatment, by acting on the skin and bowels. In the last case he had, however, he thought it right to use local depletion. It was a case of a previously robust child, of four or five years of age; the urine was bloody and highly albuminous, and convulsions supervened of an epileptic form. He applied leeches to the loins, with the effect that the urine became more copious and free from blood corpuscles. At the same time he thought that when they considered the state of the blood in scarlatinal dropsy—loaded as it was with excrementitious matter—and the great tendency to anæmia in the disease, they would have recourse to this remedy with very great caution.

Dr Richmond, Paisley, said that some fifty years ago bleeding was perhaps had recourse to too indiscriminately, with the result of sometimes doing mischief; but now they had, from the force of natural recoil, gone too far in an opposite direction. In all plethoric conditions of the system, with serious congestions of organs, many a life would be saved by timely depletion. In one case of scarlatinal dropsy, in a child two years old, there was a total suppression of urine, the breathing had become very short, &c., and the case seemed hopeless; bleeding eased the respiration, but the secretion of urine did not return. A second bleeding, however, not only gave additional relief, but restored the secretion. The child made a good recovery. In another case—that of a boy six years old—he gave first the ordinary treatment for scarlatinal dropsy. He was sent for in great haste, found the child in convulsions, bled him very copiously, with immediate relief to the convulsions. The first bleeding in many cases did not restore the secretion of urine, but a second bleeding rarely failed. The anæmic appearance of these cases was illusory. They stood depletion uncommonly well. In one case he knew a child had a number of abscesses. The lancet gave great relief; but on calling again he found that a blood vessel had burst and bled profusely. Yet that child recovered. No mode of relief

was so certain as copious bleeding in these cases, and at the same time attended with so little bad effects afterwards.

Dr Fergus said that he had nothing to contribute to the discussion, but he thought it fair to *Dr Kirk* to say that the case to which he referred as having been seen by him (*Dr Fergus*) was of a very grave nature indeed, and the effect of the bleeding had certainly surprised him.

Dr Graham, Paisley, said that his experience of venesection in these cases had been as satisfactory as that of *Dr Kirk*.

Dr Hugh Thomson related a case of a child suffering from scarlatinal dropsy, in which there was effusion into the pericardium. Leeches were applied to the loins; purgatives and diuretics had but little effect. Called in suddenly to see the child, he found it gasping for breath. There was evidently congestion of the lungs, and the appearance was as if it were at the point of death. He at once opened a vein; the blood came at first only by drops, but afterwards freely. The result was that the free action of the kidneys was set agoing, and the child made a good recovery. In ordinary cases, however, he generally found leeches, with purgatives and diaphoretics sufficient. The older authors recommended free venesection before these urgent symptoms made their appearance. *Gregory*, for instance, recommended that with a hot skin, hard pulse, scanty urine, the patient should be bled before there were any symptoms of anasarca. *Dr Reid*, of *St Andrews*, even recommended that blood should be drawn from the jugular vein as a means of relief for congestion of the right sides of the heart.

Dr Morton said he had seen several forms of modern "revival," but he believed that one of the most sensible would be the resuscitation of the practice of venesection in several acute maladies. He questioned whether it was correct to say that the present practice of the profession was to give diuretics in dropsies following scarlet fever. Applications to the skin, purgatives, etc., were certainly much more common. He thought that if the use of the lancet was in former times too indiscriminate, its present non-use was equally indiscriminate.

Dr Gairdner said that the greater number of cases which he saw were at a step further advanced than those described by *Dr Kirk*, in which no one would dream of trying bleeding. *Dr Kirk*, however, was fully entitled to claim some of the results in his cures for the bleeding treatment. There was quite a catena of evidence that in a great many cases bleeding proved more successful than any other remedy. But it must never be forgotten that the natural tendency of the disease was to depletion, and therefore recourse was to be had to this treatment very judiciously. He neither admitted nor denied the theory on which *Dr Kirk* based his practice. There was one mode of treatment of which *Dr Kirk* had taken no notice, which he (*Dr Gairdner*) had often found of singular value, viz., packing with the wet sheet. This mode seldom disappointed expectation. The hot air bath, on the other hand, he had tried, and found wanting. The latter was exhausting in its action, and generally deleterious. There was a good deal to be said of *Dr Dickinson's* treatment by copious draughts of cold water. If diuretics were used, it should be those which were at the same time diluents. For a long time there existed a morbid fear of the use of diuretics in the London school.

The President said that many of them were aware that his father had been an earnest advocate of the utility of bloodletting, and in his long practice he used it very successfully. He himself was a living example of the utility of bloodletting in scarlet fever. There was no doubt that they had too thoroughly given up bloodletting. In proper cases, and within proper limits, the treatment was most effective. Into the general theory of the matter he could not enter; but he believed that the arguments of *Dr Bennet*, being founded on a view far too limited, were essentially fallacious. *Dr Bennet* looked upon inflammation as simply an exudation, disregarding other elements of the condition. This was a view which did not hold good in practice.

Dr Kirk, in replying, gave some additional cases in which bloodletting had been of advantage. In regard to what had been said about the danger arising from the anæmic state of the patients in these cases, the anæmia was more seeming than real. An analysis of the blood by *Andral* brought out the fact that the red corpuscles were actually increased. The treatment had, no doubt, to be applied cautiously; but they must take care not to be deterred by imaginary dangers. He thanked the members of the Society for the courteous manner in which they received his contribution.

Glasgow Pathological and Clinical Society.

SESSION, 1876-77.

TUESDAY, February 27th, 1877.—*Dr Joseph Coats*, President, in the Chair.

Dr Meighan showed a child with ANOPHTHALMOS. In the patient (*John Connoly*, æt. 15 months,) both eyes appear to be absent. The orbital cavities are deep and of the usual form, except at the fronto-parietal articulations, which are somewhat depressed. The palpebral fissures are contracted owing to absence of the distending influence of the eyeballs. The eyelids are fully developed. The inner surface of the lids and cavities are lined with mucous membrane, which is puckered to a point at the bottom of the cavities, forming a reddish mass of cicatricial-like tissue, and from the slight movements observed evidently containing muscular fibres. The child is otherwise well developed and intelligent.

Dr Reid remarked that this was the first case of the kind he had seen. There were in all about a dozen of recorded cases. The term anophthalmos referred to an apparent absence of both eyeballs as opposed to monophthal-

mos, where only one eye was absent; and to the cyclopiian eye, where the rudiments of both eyes were present but were united in the centre of the forehead, above the root of the nose, a condition more common in the lower animals than man. In all these cases, where the eyelids and lachrymal organs were present and the orbital cavity well developed, there must have been an arrest of development of the eyeballs at an early period of embryonic life, because the development of these parts depends on the laying down of the primary, and probably of the secondary eye-vesicles also, as will be understood from the following account of the development of the organs of vision:—The first appearance of the eyes in the embryo is as a vesicular dilatation on each side of the front brain (the primary eye vesicle). This vesicle, supported on a slight pedicle, soon becomes cupped at its vertex. The epiblast covering this part becomes thickened, depressed, and finally invaginated and constricted at its orifice. When the communication with the surface is cut off, the invaginated portion remains attached in the form of a hollow sphere lined with epithelium, which ultimately becomes the lens, and the remaining superficial epiblast the cornea. These changes occur before the third day in the chick, and before the end of the sixth week in man. Nearly at the same time a depression is formed along the under surface of the vesicle, and extends to the pedicle or optic nerve. Into this groove, and behind the lens, the vitreous is developed from the mesoblast, which, together with the lens, constitutes the secondary eye vesicle. The choroid and iris, which now envelop the primary eye vesicle or retina, have also a slit in this early stage corresponding with the groove of the vesicle. This groove does not close up till after the development of the sclerotic from the investing membranes has completely enveloped the partially-formed eyeball. The eyelids make their appearance as folds of integument subsequent to the formation of the eyeball. When they have met together in front of the eyeball, their edges become closely united four months, and again open before birth. Now, if the slit in the choroid and iris remained open after being covered in by the sclerotic, and development of the eyeball went on, we would have the common form of coloboma of the iris, and choroid so frequently associated with microphthalmos (small eye.) But if, on the other hand, along with the arrest of development, and possibly causing it, certain retrograde changes occurred, the tissues of the eye might be reduced to a mass of cicatricial tissue, having traces of the sclerotic, pigment of the choroid and muscular fibres, while the development of the appendages and orbit went on as usual. In two of the recorded cases there was total absence of the eyelids and lachrymal organs; in this case, if the rudiments of the eyes ever existed, the retrograde changes must have begun before the formation of the secondary vesicle, which precedes the formation of the eyelids. In a few recorded cases a communication remained open with the brain, *per* optic nerve, and dropsy had been noticed. In other cases atrophy of the parts as far back as the corpora quadrigemina was noted.

Dr Robertson showed a sylvian artery plugged by an EMBOLUS at the bifurcation of one branch. Patient was aged 58, and was suddenly rendered hemiplegic on left side, with slow pulse (40), and a peculiar form of speechlessness. On post mortem examination the left lobe of Broca was found quite healthy: there was softening of the middle lobe external to the corpus striatum and optic thalamus, *i.e.*, at the part supplied by the plugged artery: the arteries of the brain were not diseased. The heart was enlarged, and there were soft vegetations on the mitral valve.

Mr H. E. Clark showed a foetus in which the thighs were united as far as the knees, but the legs separate and each terminating by a rounded point. There were no feet, and no external anus or mark of one; and the external organs of generation were also absent, not even a dimple representing them. The knee was turned round so that the patella faced backwards and the flexor surface of the ham forwards. In the abdomen, close to the internal ring, lay an undescended testicle on one side only, the companion one being absent. The colon was full of fæces and terminated in a *cul de sac*, which, though attached to the bladder, did not communicate with it. The bladder had no opening externally. The pelvis was ill-developed. *St. Hiliare* had divided these syrens into—1. *Symèle*, with the legs united as far as the ankles, and two feet and ten toes. 2. *Uromèle*, legs united as far as the ankles and only one foot. 3. *Syrenomèle*, legs united and no feet. The case shown differed from these. It is noteworthy that the external organs of generation have always been found absent and the internal ones ill-developed; while the extensor surface has been turned to the posterior aspect and the colon ill-developed. In the case under notice, however, the colon was large. The kidneys were normal.

Dr Tannahill said the child was born in the city. The mother was one of a family of 14, and all of them were well developed, no deformity having ever been noticed. The foetus was born out of wedlock; the breech presented. The mother was a primipara.

Dr Geo. Buchanan showed a MALIGNANT TUMOUR OF THE BLADDER from a patient aged 50. Patient was moribund when admitted into the Western Infirmary, but from the friends *Dr Buchanan* elicited that there had been the exaggerated symptoms of enlarged prostate for many years. The catheter was introduced easily, but in the bladder it came upon an obstacle larger than could be expected from enlarged middle lobe of prostate. A tumour the size of the fist could be felt *per rectum*; there was a little blood in the urine, but not anything like a free hæmorrhage. After death a tumour with a dendritic surface was found in the floor of the bladder, grasping and enclosing the prostrate, but not invading it.

Dr Joseph Coats added that the ureters were obstructed by the growth, and in consequence some dilatation of the ureters and the pelves renales was present, more marked on the left side—the left ureter looking like a loop of small intestine. The microscopic structure of the tumour was that of cancer.

Dr Buchanan also showed a TUMOUR from near the male breast. Patient was a man aged 55, and for six months the tumour had been gradually growing just under the edge of the pectoral muscle. It was not incorporated with the muscle, but extended to near the nipple over the edge of the muscle. There was darting pain and some interference with the movements of the arm by the tumour. The nipple was not involved;

and the tumour was freely moveable. Dr Buchanan removed both nipple and tumour—the latter being about the size of a hen's egg.

Dr Joseph Coats found the structure that of spindle and round cells in varying proportions.

Dr H. Cameron had seen three cases of mammary tumour in the male, all of which were in old men, the tumour being of rapid growth and adherent to the wall of the chest.

Dr Macewen showed a MOUSE WITH FAVUS on head and face. It had communicated the disease to a child of 3 years of age. When seen by Dr Macewen there was a spot of favus on the outer and under aspect of the thigh of the child; and some difficulty was felt in tracing the probable source of the infection. One evening the father of the child noticed a mouse playing about the fireside and upon a hassock on which the child had been sitting; and on the head of the mouse were white spots, which seemed to him like those upon his child's legs. With the aid of a trap the mouse was secured, and the diagnosis verified. The intermediate means of infection appeared to be the hassock, the bare thigh of the child having rested upon the spots touched by the mouse.

Dr H. Cameron had seen a case of favus upon the bill of a canary bird; in such cases the seed was the means of conveying the disease to the birds.

Dr Reid had examined favus from the shoulder, and it seemed to him that the parasite was in the first instance below the epidermal layer, and that the latter eventually bursting at one point a cup-shaped depression was left. The manner in which the spores reached the rete-malpighi was not clear.

Dr Macewen said there had been no scratch observed on the thigh of the child.

Dr Knox said he had witnessed an epidemic of favus in a collection of rabbits, some 30 or 40 cases; the favus grew on the nose and mouth and obstructed the breathing and feeding. In this way several deaths occurred; and in one doe abortion took place.

TUESDAY, March 13th, 1877.—Dr Joseph Coats, President, in the chair.

Dr Reid showed the case of EPICANTHUS which was brought forward at last meeting, pointing out the steady improvement after the repeated operations. There remained an apparent paralysis of the levatores palpebrarum which would gradually disappear with the freer use of the lids.

Dr D. Foulis showed parts from a case of ARTHRITIS DEFORMANS (chronic rheumatic arthritis) of the hip-joint. The head of the femur was cemented

to the acetabulum by cartilage, and the whole of the osseous parts were distorted by the absorption and the new deposition of bone over particular areas.

Dr Gairdner showed parts from a case of AORTIC INCOMPETENCY. There was nothing peculiar in the diagnosis; the heart was dilated, the aorta atheromatous. During life there had been hæmorrhage in the lungs and considerable orthopnœa and suffering. At the *post mortem* examination the aortic valve was found to be excessively incompetent; the valves were thickened and shortened; and there were only two segments. Peacock had described this as a congenital mal-formation of the valve which led up to disease during the course of life; but *Dr Gairdner* was doubtful of the applicability of this theory, and rather believed that there had in this case been three segments originally, and that union of two of the segments having occurred, there had been subsequently a rupture of the connecting band between the united segments and the wall of the aorta. The history of the case was curiously, in most of its details, almost identical with that of the first case in Peacock's book (page 9, patient aged 40, history of rheumatism ten years before death, with recovery and fair health until three months before death). In *Dr Gairdner's* case sphygmographic tracings showed an aortic pulse—acute apex, a definite tidal wave and very little diastolic, thus bearing out the theory that the shock from the aortic valve is in part at least the cause of diastolic.

Dr Hector Cameron showed a patient who, in July, 1876, was admitted to his wards with a large TRAUMATIC ANEURISM of brachial artery. Six months before, patient received a blow with a hammer just above elbow, and soon after noticed a purring pulsation at the spot. On admission the aneurism measured $3\frac{3}{4}$ by $7\frac{1}{2}$ inches, and the circumference of the arm over it was $12\frac{7}{8}$ inches. *Dr Cameron* ligatured the brachial in its first part with anti-septic precautions and the wound healed up in a fortnight, the aneurism diminishing a little in size and becoming firm and solid. The patient resumed work in the beginning of September, and the lump on his arm slowly disappeared until now, when a mere trace of thickening alone can be felt. Pulsation in the radial artery returned one month after the operation, but even yet it is feeble as compared with the other arm.

Dr McCall Anderson showed parts from the case of a man aged 53, who had suffered from a large ANEURISM behind the manubrium sterni. The symptoms were severe cough, especially on lying upon left side, dyspnœa, hoarseness, pain between the shoulders, difficulty in swallowing solid food, and pain in sternal region. There was prominence and dullness over and to left of upper part of sternum; the heart sounds were loud, but there was no murmur. The apex was lowered, its impulse strong, and the area of cardiac dullness increased. The left pulse was weaker than the right, the pupils were natural. The trachea was pushed

to the right side, the breathing noisy but free. Under Tufnell's treatment, iodide of potassium, and low diet and perfect rest, improvement took place. The cough was much benefited by Tr. Gelsemini; and the cardiac action was calmed by Tr. Veratri, which at the same time was observed to have a soporific effect. After three months the iodide of potassium was omitted, and the dietary made rather more liberal. Four months later patient was able to go about; and five months after that time he went to reside at Kilmalcolm, travelling up to Glasgow daily in pursuit of his business. This extra exertion was followed by exacerbation of all the symptoms, and by sudden death on August 20. At the autopsy there was found a large aneurism of the transverse part of the arch lying rather to left of middle line of sternum to which it was attached, and which it had eroded at one point almost to perforation. The upper part of the sac was solid with laminated clot, the lower two-thirds contained fluid blood and was furnished with very thin and flaccid walls. The blood had dissected between the clot and the wall of the sac, and had forced its way through the latter into the left pleural cavity, where were $3\frac{1}{2}$ pints of partly clotted blood. The left recurrent nerve was stretched over and flattened on the sac. To compare with above—

Dr M'Call Anderson also showed the parts from the case reported in *Lancet*, June 20th, 1874, where galvano-puncture had been followed by solidification of the aneurism; and stated that his good opinion of the treatment by galvano-puncture, as versus Tufnell's method, was confirmed by the study of these two cases.

Dr William Macewen showed a specimen of an OBLITERATED ANEURISM taken from the body of a man who, while in life, was shown to the Clinical and Pathological Society on two occasions. The first time he was presented to the Society, on 23rd March, 1875, as a case of multiple aneurisms, when he was shown to have an aneurism of the left femoral of small size, situated above the apex of Scarpa's triangle, and a second one situated over the upper part of the right femoral, and involving the external iliac. This one measured five inches in diameter over its convexity. Its anterior wall was thin, and at one place seemed as if the skin and a very thin layer of the sac only intervened between the finger and the circulating blood. The whole of the superficial arteries were hard as if markedly calcareous. On October 12, 1875, he was shown on a second occasion with the large aneurism obliterated. The method adopted, after various methods had been tried and found futile, was to insert a steel needle into the sac, simultaneously exercising pressure above and below the aneurism. The needle was kept in for an hour, and the pressure was afterwards gradually removed. Twelve hours after the wall of the sac was distinctly firmer, and five days after the pulsations had entirely ceased, the tumour feeling hard and firm. (See former accounts of the case up to this point in *Glasgow Medical Journal*, Vol. VII., No. III., p. 415, and Vol. VIII., No. I.,

p. 132.) After a comparatively short convalescence he again resumed work, at which he continued for fully eight months. At the end of that time he presented himself at the Royal Infirmary Dispensary with epithelioma of tongue, for which he entered the wards of the Infirmary, where he was treated palliatively, and finally was dismissed incurable; and he died, after a lingering illness, on 13th May, 1876, (thirteen months after obliteration of femoral aneurism). A *post-mortem* examination was obtained, and Dr Foulis performed it on 15th May, 1876. He reports as follows:—"A large aneurism existed on the descending part of the arch of the aorta. The aorta, and indeed all the arteries examined, were atheromatous, the interior of the aorta being in places quite lined with calcareous curved plates. In the left groin was an aneurism of the size of a small hen's egg, consolidated by a firm yellow clot, in the upper and anterior part of which a channel ran corresponding to the channel of the femoral artery. The walls of the aneurismal sac were rough, and rather adherent to the clot; they were lined by a yellow, flaky, atheromatous material. The layers of the clot could be easily separated in certain places: the clot was, to a large extent, decolorised. The channel in the clot above referred to was lined with a delicate perfectly smooth translucent layer, almost like a membrane rather wrinkled transversely. The femoral vein was firmly attached to the back part of the aneurism; its walls were thickened.

"In the right groin were the remains of another aneurism in the form of a small elongated hard firm fibrous mass two inches long, and three quarters of an inch thick at the chest part. On being cut open this was seen to be made of a dense cicatricial fibrous tissue, in which were embedded small particles of calcareous matter, and some yellow atheromatous fragments. Under the microscope the texture was that of scar tissue, and in it could be seen the remains of a reddish pigment. The femoral artery was patent down to this mass; but below it the vessel was filled with a reddish-gray thrombus for about three inches. Lower down the artery was partly patent, but there was a shrivelled, pale, tough tissue, of a slightly porcellaneous aspect separable from the internal coat; lower down, and continued into the popliteal space, there was a complete plug of this substance filling up the calibre of the vessel, except for a very small channel drilled, as it were, through the side of the thrombus. The femoral vein was adherent to the back part of the obliterated aneurism. The popliteal artery was given off (just as in the other case) from the lower end of the fibrous mass; it was patent quite up to its origin in the fibrous tissue."

Dr David Foulis showed an ANEURISM OF THE INNOMINATE, which had undergone spontaneous solidification. Patient died of pleuropneumonia; and, at the autopsy, an aneurism six inches long by three inches broad, and a flattened ovoid shape, was found occupying the site of the innominate artery. No symptoms had been observed during life referable to it. The veins were turgid with blood; the left subclavian vein

was stretched like a riband across the front of the aneurism; the superior vena cava was three inches long and flattened; the trachea was pressed on and pushed to the left; the right pulmonary artery was also compressed. The aneurism was quite solid and full of a yellow, fine laminated clot, at the back part of which was a passage, cleanly drilled in the clot, of the calibre of a lead pencil, through which the blood found its way to the right subclavian and carotid arteries, which were given off at the upper end of the sac.

Dr Aitken (of Netley) said the subject of aneurism, especially of the thorax, had always interested him. The series shown at the meeting was complete; and that shown by *Dr Foulis* was specially instructive, as illustrating a point which had often come under his notice—viz., that aneurisms may exist in the body without being suspected, and may undergo a sort of spontaneous cure. Aneurisms originated in two conditions—First, there was the disease of the walls of the artery—a lesion of the internal structures of the wall, small at first, but soon enlarging; and, secondly, there were the conditions under which the patient lived, acting on this lesion. Alcoholism, syphilis, and rheumatism were such influencing conditions; and he noted that in the army the men work under unusual conditions—drilling with rigid trunk, and making violent use of their limbs. This could not but give rise to an increased strain on the internal parts, and to a large extent aggravate the effect of the disease of the coats of the arteries. Another cause assisting formation of aneurism was malformations of various kinds. The specimens shown at the meeting helped to show also how far aneurisms might go without causing death.

Dr McCall Anderson was struck with the frequency of aneurism among soldiers, especially internal aneurisms, of the recorded cases of which a large proportion were in men who were or had been soldiers: he quite coincided with *Dr Aitken* in his explanation of this fact. *Dr Macewen's* case was of interest, as raising the question of how much, in galvanopuncture, was due to the needle alone, and how much to the galvanism. Probably the presence of a foreign body in the sac acted as a nucleus of coagulation; and this led to the idea that it was wrong to try and entirely fill the aneurism at the first sitting in such operations; all that was required was to form a small coagulum on which, as a nucleus, a continual coagulation might go on.

Dr Finlayson wished to raise the question of the value of treatment in aneurism. Specimens had been shown of solidification, due to galvanopuncture, &c., but then there were other cases (e.g., that shown by *Dr Foulis*) which solidified without any assistance. The result of the treatment by iodide of potassium and rest and low diet in *Dr Anderson's* case was only apparent, and not real benefit. He (*Dr Finlayson*) had treated a case of a woman with abdominal aneurism for some months, by *Tufnell's* method, with the effect of removing the pain, and lessening, though not extinguishing, the pulsation—not, therefore, a complete cure. Another case, which, after prolonged trial of the same method, was transferred to *Dr Tufnell's* charge in Ireland, underwent a cure, but only to die of another aneurism lower down. At the autopsy the first aneurism was found quite solid. Treatment, therefore, was not quite successful in all cases. As to *Dr Macewen's* case, was not the corresponding aneurism of the left femoral solid, without treatment?

Dr Gairdner did not wish to follow *Dr Tufnell* to the extreme of his system; but he had great faith in iodide of potassium. He had seen many successes from its use, and thought that if it failed little else was of much use. He had never seen *Valsalva's* method tried—that of bleeding; but he believed rest, carefully restricted diet, and iodide of potassium to be the best lines of treatment.

Dr Dunlop related a case of rupture of aneurism into the pericardium. He often examined bodies of men who died suddenly in the street, &c., from aneurism, and in such cases often found large quantities of clot in the sac. This bore out the idea of the tendency to spontaneous cure.

Dr Gairdner showed parts from a man, æt 45, who had been leading an active life up to a few days before death, and who enjoyed fair health. He had just come out of a drinking bout when he was seized with severe thoracic pain and collapse. When seen by *Dr Gairdner* the pulse was of fair strength, 110°, regular on the whole, though a little shaky at times; the pain had abated; the heart seemed normal, except that the second sound was nearly absent at many points; the first sound, too, was not particularly distinct; there was no evidence of dilatation or hypertrophy; the lungs seemed in good order; the liver was slightly enlarged. Under the influence of morphia patient slept well and awoke free from pain, except when turning in bed. Next day, at 7.30 p.m., a convulsive fit occurred, from which patient recovered, with cold hands and pulseless; some twitching of the right arm and muscles of face was then noticed, the pupils dilated, and patient died. On *post-mortem* examination, a RUPTURE of the inner and middle coats of the DILATED AORTA was found; the external coat was thin and perforated by a pinhole puncture, through which blood had escaped into the pericardium. The heart was very fatty, both in its fibre and externally, there were even numerous distinct, though small fat vesicles lying below the endocardium on the septum. This state of the heart itself may have contributed to the defective quality above indicated of the sounds, but it did not obviously affect the fatal result, and here we had all the symptoms of angina and collapse, apparently caused by rupture successively of the coats of the vessel. Probably the first accession of pain was coincident with the rupture of the internal and middle coats, and the final collapse due to the perforation of the external coat. A similar case is figured and described in fig. 6 of the 10th plate of the 4th fasciculus of the anatomical drawings of the army Medical Museum at Chatham. The delay in the final fatal result, after the first severe symptoms have occurred, is brought about by the stretching, without rupture, of the external coat; and in some cases of this kind of partial rupture the middle coat splits into layers, and a kind of false passage is formed along the vessel for a considerable distance, the blood gradually dissecting the middle coat, and thus establishing what has been termed a dissecting aneurism, the external coat remaining intact for a long time, as is shown in cases by *Dr Peacock* and others.

THE GLASGOW AND WEST OF SCOTLAND MEDICAL ASSOCIATION.

ANNUAL MEETING, MARCH 2ND, 1877.

The annual meeting of the Glasgow and West of Scotland Medical Association, as convened by printed circular, was held in the Faculty Hall, on 2nd March, 1877. The President, Dr Allen Thomson, in the chair. There was a good attendance of members.

The General Business Secretary read the minutes of last meeting, and also the minutes of the last meeting of the General Business Committee, both of which were approved.

The Treasurer, Dr Wilson, read his report, which was approved by the meeting. It showed that there were in all 292 members on the roll during 1876. The names of 35 of these were deleted, as either having withdrawn from the Association, or as having died during the year, thus leaving 251 members on the roll on 1st March, 1877. He then read an abstract of his account of charge and discharge for 1876, showing a balance in favour of the Association at the end of the year of £121 18s 1d. He further stated that this sum would be increased to at least £140 by that year's advertisements and hitherto withheld subscriptions, and that deducting from this latter sum the price of the October number of the *Journal* (the only debt of importance applicable for 1876 unpaid before its close), there will remain a sum of at least £100 as a reserve fund, clear of all liabilities. After the Treasurer's statement had been made, and a communication from Mr Clark read, explaining his unavoidable absence, Dr E. Watson commented on the short notice which had been given in calling the meeting, and proposed its adjournment till a future date. This proposition was seconded by Dr Gairdner, and agreed to unanimously by the meeting. The Secretary was instructed to call another meeting on 9th March, and he accordingly did so, issuing the notice of the meeting on Monday, 5th March, 1877.

The annual meeting of the Glasgow and West of Scotland Medical Association, which was adjourned from the 2nd instant, was held on 9th March, at 4 P.M., in the Faculty Hall, St Vincent Street—the President, Dr Allen Thomson, being in the chair.

The General Business Secretary read the minutes of last meeting, which were approved.

Mr Clark then read the report of the "Editorial Committee," which is as follows:—

"The Editorial Committee have to report that some difficulty has been experienced during the last year in obtaining literary material with sufficient punctuality to ensure the issue of the *Journal* at the stated periods. Notwithstanding the difficulty and delay, the numbers issued have contained papers of considerable professional value, and the Committee are not without hope that the disadvantages alluded to, though undoubtedly great in

their bearing on the present prosperity of the *Journal*, may be overcome in future. Both teachers and practitioners have been well represented in the pages of the *Journal* hitherto, and their most energetic support is now solicited to place it on a thoroughly efficient basis. The Editorial Committee have no doubt of the existence of abundant literary material, and are convinced that, if the claims of the *Journal* are once properly understood, it will soon attain to a satisfactory condition.

“The Committee confess that perhaps they have trusted too much to a spontaneous supply of articles, and they would recommend those who succeed them to use individual efforts more extensively in the collection of papers, and possibly to allot distinct departments to the several members of Committee. In this way they believe that the Editorial Secretary would be relieved of some labour and responsibility, and that the work would be more completely and punctually done.

“The Committee are glad to report that the supply of books for review has been even greater than hitherto, and they would state this as an indication to a certain extent of the literary position of the *Journal*.

“The two first numbers of last year’s issue were published on the last day of the month preceding that on which they were due. The July number was somewhat late, but appeared during the course of that month. The October number, which has always been the most difficult to issue punctually, was delayed from lack of material till the commencement of the present year. The number for January of the present year is now on the table, and the April number is in course of preparation; but owing to the want of material, it is impossible to speak precisely as to the date of its issue.”

Dr H. Thomson moved the adoption of the report.

Dr James Morton regretted to hear from the Editorial Secretary that the supply of literary material was deficient, and in order to remedy this state of matters, he made two propositions—first, that there should be a more frequent issue of the *Journal*; and, second, that the contributors should be paid.

Dr E. Watson thought that the proposal to pay contributors was not one that would elevate the position of the *Glasgow Medical Journal*. The affairs of the *Journal* were evidently in a very bad state, and some radical change ought to be made in its conduct. He therefore moved that a committee be appointed to look into the matter and report to a future meeting, and that this committee be composed of gentlemen other than those having to do with the present administration of the *Journal*.

After some discussion, Dr Watson seconded the adoption of Mr Clark’s report, but, at the same time, pressed his motion.

Dr Scott Orr thought that the *Journal* should not be issued monthly.

The Editorial Report was then unanimously approved by the meeting.

Dr J. Cowan moved the previous question—i.e., that as this meeting has in its hands the appointment of all the members of the Business Committee, from the President downwards, it therefore should proceed to appoint gentlemen in whom it has confidence to represent the Subscribers.

Dr Bell thought that Dr Watson's motion would be virtually a vote of censure on the old administration, and he believed that it was not the fault of the management that the *Journal* was not issued regularly, but the want of contributors. He also urged the payment of the Editor.

Drs Robertson and Gairdner spoke against Dr Watson's motion.

Dr Watson stated that he had no intention of passing a vote of censure on the old committee; on the contrary, he thanked them for what they had already done; but for the future prospect of the *Journal*, he wanted an independent committee to sit and consider the question.

Dr Watson's motion, after having been seconded by Dr J. G. Wilson, was then put to the meeting, when one gentleman, besides the mover and seconder, voted for the motion. The previous question was then put to the meeting, and carried by a large majority.

The meeting then proceeded to elect the General Business Committee, which now stands as follows:—

GENERAL BUSINESS COMMITTEE, 1877,

As elected at Meeting of Association, 9th March, 1877.

President—Dr ALLEN THOMSON.

Vice-Presidents—Drs J. B. RUSSELL and JAMES MORTON.

Treasurer—Dr JOHN WILSON.

Editorial Secretary—Mr H. E. CLARK.

General Business Secretary—Dr WILLIAM MACEWEN.

Members.

Dr FINLAYSON.

Dr WOOD SMITH.

Dr YELLOWLEES.

Dr CAMERON.

Dr TENNENT.

Dr WATSON.

Dr CHARTERIS.

Dr ROBERTSON.

The meeting terminated by expressing a vote of thanks to the President.

Medical Intelligence, &c.

GLASGOW MATERNITY OR LYING-IN HOSPITAL.—The Annual Report of this Institution for the year ending November 15th did not reach us in time for notice in our January issue. The following is an abstract of the report of the medical officers:—"Number of women confined in Hospital, 293; confined at their own homes, 937; total, 1230. Maternal deaths in Hospital, 5; outdoor, 3; total, 8. Of complicated cases, there were in Hospital 7 instrumental labours, and 1 where manual interference was required; outdoor, 20 instrumental cases, and

8 requiring manual interference. The causes of maternal deaths in Hospital are given as peritonitis 1, phthisis 1, nervous shock 2, acute pneumonia 1. During the year 293 women were delivered in the Hospital, and 937 at their own homes—in all, 1230. The corresponding figures in the Report of last year were 304 indoor cases, and 927 outdoor cases. In fact, the total numbers delivered last year differed only by one from those delivered during the present year. It will be observed, however, that the number of indoor cases last year was somewhat below that of previous years. These small variations in the total cases treated annually during these years are, perhaps, scarcely deserving of notice. A hypothetical explanation may, however, be ventured on. There can be no doubt that the operation of the City Improvement scheme has been to root out a very considerable proportion of houses from which the Hospital derived its supply of patients, both for the indoor and outdoor departments. Many of the patients, and the class to which they belong, have been obliged to betake themselves to the suburbs, or, at all events, to localities considerably removed from the Hospital. Not a few of the cases which, under the former state of things, would naturally have gravitated to this Hospital are now attended in these localities by midwives and nurses trained by us. Besides, this decrease is also partly occasioned by the different parochial boards of the city that formerly sent us patients having now open maternity wards in their own Institutions for the confinement and treatment of their own patients. This, however, is more than counterbalanced by a corresponding increase in the outdoor department. The average number of the latter class for the previous seven years was 865, so that in the year just ended there have been no fewer than 72 over the average who have received the necessary attendance through the agencies of this charity. In this way, although the direct advantages of the Hospital have, to some small but appreciable extent, diminished, the indirect advantages to the same destitute class of people have been largely increased. During the year, as for a number of years past, the Hospital has been in a healthy condition, though it appears from reports in the house journals that, for a few days in the early part of the year, some insalubrious indications had been observed in the wards. But these influences, although not attended with any serious results, whatever their nature, were easily counteracted. It will be observed that during the year five deaths have occurred in the Hospital, but only three of these were, in any proper sense, childbed deaths. The other two were attributable to diseases from which the patients had been suffering previous to their admission. The death-rate was therefore somewhat greater than that in the city generally during the same period. But the nature of the cases, and the class of patients admitted into the Hospital, must render some little excess of comparative mortality inevitable. Not a few of the cases presented formidable difficulties which, in a poor class of patients, could not have been well encountered in their own homes. Hence the responsibility thrown upon the Institution. The childbed mortality

over the whole city during the Hospital year was not high. The births within the city were 21,055, and the deaths from metria and childbed mischances were 111. This gives a mortality percentage of 0.5. During the year the objects and advantages of the Institution have been well utilized—first, as a charity to provide relief and attendance at the time of their confinement to poor women, either in the Hospital or at their own homes; and second, as a school of practical instruction in the art of midwifery, no fewer than 75 medical students having attended the practice and clinique of the Hospital during the year. Of monthly nurses there are on an average 20 trained per annum. Many of these are constantly engaged in the best families in the city; and we have reason to know that the efficient services which they render at the bedside are duly appreciated by the medical gentlemen in attendance. Others settle down in the suburbs, or in the mining and rural districts of the country, and there practise as midwives. The services which they render in districts remote from the residence of a medical practitioner, and to a class of people who could ill afford to pay for the attendance of the latter, are invaluable. The gradually increasing number of midwives and nurses trained in the Institution has rendered it necessary for the matron to keep a register of their names, addresses, and qualifications. Both to the women themselves, and those desiring to employ them, this has been attended with much advantage. While the success of the Hospital affords much cause for congratulation, that very success, showing as it does the urgent need for such an Institution, brings with it matter for regret. This arises from the very limited and inadequate accommodation afforded by the existing buildings. It cannot be questioned that the purposes which the Hospital is intended to serve can only be carried out imperfectly in the present house. Although not originally erected for an Hospital, the most has been made of it; but it cannot be expected that its conveniences are equal to the requirements of the present day. The medical officers, while deprecating any undue haste, unanimously urge the necessity for extended accommodation to carry on the different agencies in operation, and respectfully appeal to the Directors to take this matter into their earnest consideration.—R. D. TANNAHILL, M.D., HUGH MILLER, M.D.”

THE DIAGNOSIS OF CYSTS OF THE BROAD LIGAMENT.—Prof. Gusserow records a case of cyst of the broad ligament in which the cyst again filled after tapping, and was then extirpated. The patient was seventeen years old, had menstruated regularly since the age of fourteen, and the abdomen had been enlarging for two years. The abdomen was greatly distended, and uniform fluctuation extended all over it. In the middle line there was dulness up to a hand's-breadth from the ensiform cartilage. In the flanks there was resonance only on the left side, low down. The uterus was moveable, turned rather to the left side. A segment of the tumour could be reached to the right of cervix. The tumour was emptied by tapping, 70

ccm. of watery fluid being removed. It had a specific gravity of 1002, contained a small quantity of albumen and salts, no paralbumen nor mucin. On bimanual examination after the tapping, both ovaries could be made out, the right ovary being somewhat in front and to the right of the fundus, towards the symphysis. Examination by half the hand in the rectum revealed nothing further; no trace of the cyst or adhesions could be detected. The diagnosis was that of a cyst of the broad ligament on the right side. No returning of the swelling was observed for four months, but it then began to increase again; and at the end of eight months was fully as large as before. Extirpation was therefore resolved on. At the operation two adhesions to the omentum were divided, and the cyst emptied of a fluid similar to that found before. Contrary to the diagnosis, the pedicle was found to be on the left side. It was very short, and 16 cms. (6 $\frac{1}{4}$ inches) broad, consisting evidently of two layers of peritoneum, which were inseparable from the outer cyst-wall. It was tied by ten catgut sutures, and some large veins in it were also tied with silk. The patient recovered without any bad symptoms, the temperature never rising above 37.5° C. The cyst was quite simple, and was lined with cylindrical ciliated epithelium. No muscular fibres were found in its wall. The Fallopian tube was stretched over the cyst-wall, and extended to a length of 25 cm. (9 $\frac{3}{4}$ inches). Both ovaries were felt to be intact after the cyst had been removed. The author reviews the various signs which are given as distinctive of cysts of the broad ligament—namely, that they occur in young women whose general health is little affected, contain a watery fluid of a specific gravity less than 1005, free from paralbumen or mucin, that the epithelial lining is ciliated in parts, that the cyst-wall contains involuntary muscular fibres, is often very thick, and is separable into two layers. He believes that none of these are absolutely distinctive during life, although they are generally true, and considers that the diagnosis cannot be made absolute, except by feeling both ovaries to be of normal size, after the emptying of the cyst. He has himself found, in some cases of difficult diagnosis, the fluid of a true ovarian cyst to be poor in albumen, and quite free from paralbumen, and on the other hand has, in two cases, found paralbumen present in ascitic fluid. In confirmation of this, he quotes the experience of Westphalen and Heine. He points out that the opinion of Mr Spencer Wells and Dr Bantock, that cysts of the broad ligament never fill again after tapping, is not fully confirmed by experience, as shown in the case recorded. Moreover, Dr Charles Clay, out of forty cases in which the fluid removed was thin and watery, observed a refilling in six; Dr Keith has extirpated a cyst of this kind which had refilled five times, and Spiegelberg has also removed one after repeated tapping. The nature of the fluid will generally establish a correct diagnosis, and Koeberle, who considers that such cysts should always be extirpated, has successfully removed two, by enucleating them from their peritoneal investment, having previously made a right diagnosis. But in one case of cyst of the broad ligament exactly described

by Spiegelberg (*Archiv für Gynäk.* i. S. 482), which had a thick wall of two layers, containing involuntary muscular fibres and lined by ciliated epithelium, the fluid contained resembled that of an ovarian cyst, and contained paralbumen and cholesterine. As to the source of cysts of the broad ligament, the author regards the question as unsettled as yet, whether they originate from the parovarium, or, as maintained by Waldeyer, from a remnant of the Wolffian body.—*Archiv für Gynäkologie*, B. ix. H. 3, and B. x. H. 1.

SYMPTOMS RESULTING FROM ANÆSTHESIA BY ETHER IN YOUNG PERSONS.—Dr Leon Tripier read a paper on this subject before the French Association for the Advancement of Science. He related three cases in which the administration of ether for surgical operations was attended by an arrest of respiration; and though, after long efforts at respiration, recoveries took place, the patients were placed in a most alarming condition. He also instituted experiments on young cats with ether, and found, as in young human subjects, an arrest of respiration often occurred. Older animals were less liable to this accident. He, therefore, considers anæsthesia by ether in young subjects as dangerous, and that chloroform for them should be preferred.—*Gaz. Hebdom.*, Sept. 15th, 1876.

DISLOCATION OF THE FOOT WITHOUT FRACTURE.—M. E. Courbis reports in the *Lyon Medical* a case of this rare accident. The patient, a boy thirteen years of age, in playing with his comrade fell backwards, having his left leg beneath the body of the latter, and the foot consequently in forced extension. The dorsum of the foot was a little shortened in consequence of the tibio-fibular mortise being driven forwards. The anterior articular border of the tibia jutted forwards above and in front of the astragalus. There was neither fracture of the fibula nor deviation of the foot. The heel seemed increased in length by the displacement of the malleoli forwards. The reduction was easy under an anæsthetic, and there were no after complications, the patient recovering with perfect movement of the foot.—*Revue des Sciences Medicales*, Tome IX., p. 670.

NITRITE OF AMYL IN AGUE.—Surgeon W. E. Saunders extols (*Indian Medical Gazette*, Nov. 1876) the efficiency of nitrite of amyl in ague, etc., in which its effects seem to have been most remarkable. He uses the "nitrite of amyl mixed with an equal part of oil of coriander, to render it less volatile, and, at the same time, to cover what is, to my sense of smell, a most disagreeable odour. I find it acts better in this way, owing, no doubt, to a more gradual and complete action, much less being lost during inhalation. It certainly is the most powerful diaphoretic I have ever seen; and I now use it in all cases of fever to produce diaphoresis, which it does, as a rule, in a few minutes." He adds—"I do not mean to say that quinine should not be used in these cases, for there is ample proof that it tends to check the return of the attacks, and removes, to some extent, the septic condition of

the blood, induced by the malarial poison, whatever its nature be; and this more especially, if small doses of opium be combined with it. In no case did the amyl fail to remove the attack in about one-third the usual time; and, in most cases, the fever did not again return. The method of administration I adopt is this: Four drops of the mixture, or two of the amyl, are poured on a small piece of lint, which is given into the hands of the patient, and he is told to inhale it freely. He soon becomes flushed, and his pulse and respiration are much accelerated; and when he feels warm all over, the inhalation is discontinued, as the symptoms continue to increase for a short time afterwards. A profuse perspiration now sets in, which speedily ends the attack; in some cases, however, the cold stage merely passed off without any hot or sweating stage."

ALBUMINURIA DUE TO ABSORPTION OF IODINE.—From investigations entered into by MM. Simon, Regnard, and A. Badin, as to the absorption of iodine by the skin, and its effect on the kidneys, the following conclusions have been arrived at:—1st. Iodine applied to the skin passes readily into the blood in young children. In adults it cannot be detected in the blood, nor does it produce any effect on the kidneys. 2nd. Its absorption is occasionally followed by symptoms of iodism. 3rd. In at least half the cases it causes albuminuria, and this is often grave in character. M. Badin believes that when iodine is absorbed by the skin, it is converted into iodide of sodium, which is eliminated by the kidneys, but that, in young children, the absorption is so rapid, that a small quantity reaches the kidneys without having entered into any combination, hence ensues irritation and consequent albuminuria.—*Revue des Sciences Medicales*, Tome IX., p. 559.

INTERMITTENT GLYCOSURIA.—Paolucci publishes in *Il Morgagni* the results of his investigations on this subject. He undertook a series of researches on the quantity of urine contained in the urine of diabetics at different periods of the day, with a view to corroborating the opinion of Traube on the cessation of glycosuria during the night. His analyses lead him to state conclusions completely opposed to those of Traube. He thinks that it is during the night that the excretion of sugar attains its maximum, while its minimum takes place during the day, immediately after dinner. We can, by changing the hour of that meal, modify the curve of sugar excretion. Events always follow the same order; *immediately* after dinner the quantity of sugar contained in the urine is very little or none, and may be represented by a descending line, up to the moment when digestion attains its greatest intensity; from this time the quantity of sugar contained in the urine increases, and may be represented by an ascending line. There will be, therefore, in this respect, a difference between the glycogenic physiology and the formation of sugar in the pathological state.—*Revue des Sciences Medicales*, Tome IX., p. 592.

ON THE NATURE AND TREATMENT OF CRACKED NIPPLES.—According to Dr Le Diberder, fissures of the nipple are not really the entire ailment, but a manifestation of derangements of the puerperal state. If, as Dr Donn  asserts, the fissures are due to the constitution of the milk, the alteration of the latter would imply a pathological condition of the blood. Indeed, as soon as the fissures appear, the pulse accelerates, the skin becomes hot, there is much thirst, general lassitude, and, lastly, perspiration. Sleep and appetite participate in the general disorder. Under the influence of the fever, the fissures become more tender, and augment in surface and depth; nursing becomes impossible. The author considers the febrile exacerbation as the cause, not the consequence, of the fissures; he has been led to place a secondary value on local treatment, for which he substitutes general treatment, with sulphate of quinine. The latter is given in doses of fifty to eighty centigrammes a day; the local treatment consists in protecting the parts with fresh, unsalted butter. In all cases the improvement is rapid, and a cure is accomplished at the end of five or six days. In support of his theory, the author refers to numerous observations, and a practice of thirty years, and invites a trial of his method.—*Annal. de Gyn col.*

COLD BATHS IN INFANTILE DIARRHOEA.—Dr Wocke contributes an article to the *Medizinskoie obosrenie*, in which he refers to the terrible epidemics of diarrhoea which prevail in summer, and which attack with especial severity those infants which are artificially nourished. The epidemic is due in part to the deleterious influence of the elevated temperature on the infantile organism, and in part to the injurious effect which the heat exerts on the aliment, the milk, and the air inspired. To eliminate the first cause, the author recommends cold bathing, from theoretical considerations. The result has been very happy. The wasting children, reduced by vomiting and diarrhoea to a deplorable condition, were as if regenerated by the second day after the baths were commenced. The immovable look and the restlessness disappeared; sleep was restored, the appetite increased, and the diarrhoea diminished. The cold bath acts on the child as a tonic, and enables it to resist the noxious influences, and internal remedies then exert a better influence. Dr Wocke commences his treatment with cold douches to the head and stomach, then passes to baths, commencing at a temperature of 26  C. and reducing them to 22 . A lower temperature might prove injurious. Three baths a day are sufficient. The author has cured about one hundred cases by this method.—*Lo Sperimentale*, No. 10, 1876.

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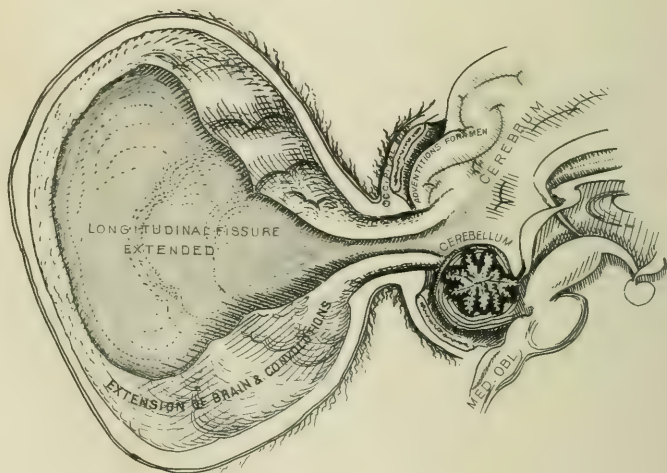
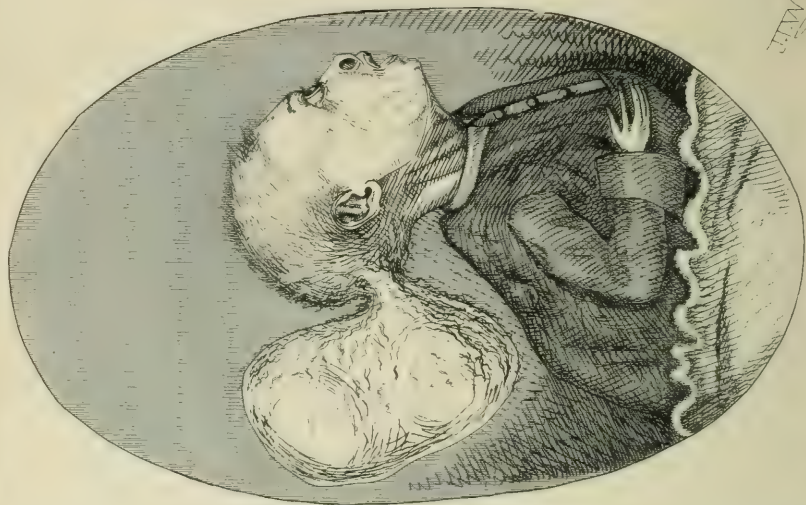
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PLATE 17



THE
GLASGOW MEDICAL JOURNAL.

July, 1877.

Original Articles.

I.—CASE OF ENCEPHALOCELE.

By ALEXANDER PATTERSON, M.D., *Surgeon and Lecturer on Clinical Surgery, Western Infirmary.*

As cases of encephalocele are not common, the following may possibly prove somewhat interesting, at least to the junior readers of the *Glasgow Medical Journal*. On the 20th of January, 1877, I saw J. B., aged $4\frac{1}{2}$ months, who was born with an oblong tumour attached to and springing from the centre of the occipital protuberance. At birth the tumour was less in size than the head—nearly of the same shape, fluctuating, translucent, with an apparently membranous covering. Labour was natural. Father, mother, and three other children are all healthy. One child died at the age of six years, of scarlet fever. Patient is a female, small for her age, but with a clear, intelligent eye; sucks well, has complete use of all her limbs, and presents no other deformity. The mother remarks that it has never cried loudly, and that tears seldom flow, and then only scantily. The baby was brought into the room lying on a pillow, held horizontally, which position it has maintained since birth; it seems to prefer resting on the right side, as it is at present. The tumour at this date, is almost twice the size of the child's head, and altogether pre-

sents a strange appearance; it is oblong in shape, about eight inches in length by four or five in breadth. As it rests on the cushion, the head is slightly drawn backwards, and cannot be raised by the infant from its constrained posture. A pedicle of about $\frac{3}{4}$ of an inch in diameter attaches the swelling to the occiput, hairy skin covers the root and extends for a short distance up the side of the tumour next the skull; the remainder of the wall appears to consist of membranes, varying in density—without hairs, smooth, glistening—here and there presenting blue, transparent patches. At its upper part a portion of the covering is reddish in colour, being the situation in which some small punctures were made a few days after birth. The entire tumour is diaphanous, except at its inferior part, where it is opaque. Small veins meander over the protrusion.

On Wednesday the 24th January, in presence of, and assisted by, Drs James Morton, Turner, Whittaker and Murray, I punctured the tumour on its upper surface, at a spot where the covering was not thinned, by means of a trocar and canula, somewhat smaller than the ordinary instrument used for hydrocele. The fluid was limpid as distilled water, and we removed what was considered to be about half the contents of the bag. The child was anxiously watched during the operation, but no change whatever took place in its countenance, nor was there any indication of suffering. Through the canula there was slowly injected, by an ordinary glass syringe, over one drachm of the fluid used by Dr Morton in his cases of spina-bifida, consisting of 10 grains of iodine, 20 grains of iodide of potassium, in an ounce of glycerine. The small opening was then sealed up by brushing it over with collodion. Before leaving the house the child was busily engaged at the mother's breast. The quantity of fluid removed measured 14 fluid ounces.

Dr Joseph Coats kindly examined the fluid, and describes it as "a limpid, colourless fluid, of which the sp. gr. is 1007. On acidulating with acetic acid and boiling, there is a distinct cloud, but the precipitate (of albumen) is very moderate in quantity. A similar slight precipitate is also obtained on

testing in the usual way with nitric acid. Fehling's test gives no reaction with the fluid, so that there is no appreciable quantity of sugar present."

25th January.—To-day the swelling is somewhat larger than after the tapping yesterday. The baby is as well as usual, and her mother states that she can cry louder than she has ever done before.

26th January.—Patient as yesterday. Tumour appears smaller, but still translucent.

27th January.—With Drs Mather, Turner and Miller, I again tapped the swelling, drawing off 9 oz. of a yellowish fluid, opaque in appearance, smelling of iodine, and having a sp. gr. of 1009, and injected as before. The tumour is now very much reduced in size, and its covering lies in folds. The opening was sealed as on the previous occasion. We calculated that a little more than half of the fluid was removed, as in the first tapping. No effect was produced on the infant, who sucked immediately after the operation. At the inferior part of the tumour, close to the pedicle, a firm substance can now be distinguished by the touch—probably brain matter.

28th January.—The child appears as usual. However, Mrs B. states that it scarcely sucks so well to-day. Fold in wall obliterated, still the tumour is not so transparent.

29th January.—No increase in size since yesterday. Child seems weakly.

1st February.—Child takes the breast well.

5th February.—Sack manifestly filling again. Baby as usual.

9th February.—Swelling continues to increase. Child at mother's breast, and when the under surface of the tumour is pressed upon, she at once drops the nipple.

26th February.—Tapped again, and 10 ounces of pale straw-coloured fluid withdrawn, when one drachm of Dr Morton's stronger solution was thrown in slowly.

27th February.—Babe as before.

2nd March.—Unaltered. No signs of coagulation in the sac.

5th March.—Little patient died last night at ten. Mrs B. states that there were no convulsions; it just slept away.

Permission for a *post-mortem* examination having been obtained, Dr Whittaker, who removed the tumour with a portion of the occipital bone surrounding the pedicle, sent me the following accurate account of the state of matters after death:—"The brain convolutions (cerebral) protruded through the adventitious foramen and completely filled the cyst of skin, the cerebral matter becoming less dense as it proceeded into the cyst. The longitudinal fissure also protruded in a complete fashion, dilating as it proceeded. The brain matter became of an œdematous character as it approached the posterior surface of tumour. The trocar had pierced the bladder-like expansion of brain and entered the dilatation of longitudinal fissure, withdrawing the fluid. The interior surface of cavity of the dilated fissure was covered with very vascular arachnoid, and cavity was filled with a great mesh of large and complicated blood-vessels, just as between fissure towards base. These were more numerous towards pedicle, less so further away. The cavity contained about $2\frac{1}{2}$ oz. of fluid. Dura mater accompanied and covered the protruded brain matter, thinning off as it got further away. I found a shreddy fibrous patch inside cavity, which I took to be the result of the iodine coagulation, and some fibrinous adhesions of cerebral substance to integument in region where punctures were made as if from same cause.

"Generally the cerebral substance was loosely adhering to integuments and easily separated by the fingers, except where dura mater was well developed, viz., in region of pedicle, where knife required to be used. The tumour and its cavity were perfectly symmetrical, and formed a beautiful *replica* of the brain and its coverings,—fluid and vascular phenomena,—the characteristics being lost as the tumour proceeded further away from the occiput."

Judging from the happy results obtained by Dr Morton in his treatment of cases of spina-bifida, I should have little hesitation, in a case of pure meningocele, viz., where the membranes alone protrude, in adopting the mode of cure by tapping and injection. In cases like the foregoing, where there is true hernia cerebri, it may be questionable whether

or not a cure may be hoped for. So far as we could observe, no irritation whatever of the brain or its coverings resulted from the operation. For the very faithful etchings illustrating the case I am indebted to my friend Dr Whittaker. Both are unusually interesting.

II.—ON MEDICO-PSYCHOLOGICAL EVIDENCE AND THE PLEA OF INSANITY IN COURTS OF LAW.

Being portion of an introductory lecture to a course on Mental Diseases, with clinical instruction, delivered in connection with the Royal Infirmary School of Medicine. *By* ALEXANDER ROBERTSON, M.D., F.F.P.S.G., *Physician and Medical Superintendent, Town's Hospital and Asylum, Glasgow.*

GENTLEMEN, in the remaining portion of this lecture I shall briefly direct your attention to two important subjects relating to mental diseases, namely, medico-psychological evidence and the plea of insanity in courts of law. These subjects, are, however, so wide in their bearings that it would require several lectures to discuss them as fully as would be desirable. My remarks will consequently be restricted to some of the leading points involved in their consideration, and even these will be of a more general nature than I could wish; but should there be opportunity in the course of the session, I may return to the questions at present passed over, or only slightly considered.

It must be admitted that medical evidence in cases where unsoundness of mind is pled, whether these be of a civil or a criminal nature, is sometimes unsatisfactory, and does not carry that weight which might have been reasonably expected, seeing that the question involved is often simply the presence or absence of disease. A little consideration will, however, show that this fact need scarcely excite much surprise. In the first place, though it be true that the problem pertains to disease, the disease is that of the mind, and is not limited to bodily ailment or injury. In the latter case, the medical witness has only to speak to matters of fact—to describe, for instance, the extent and direction of a wound, and whether it might cause death; or should the case be one

of poisoning, to state the results obtained by the application of certain well-known tests. On the other hand, the medico-psychologist has to trace courses of thought to their origin—it may be in some deep underlying morbid feeling; to unravel the motives of action; to consider whether certain action has been voluntary on the part of the agent, or if, for the time being, he has been the victim of blind resistless impulse; to detect delusion, perhaps carefully concealed; to guard against being imposed on by feigned insanity; and, having arrived at a conclusion, after careful inquiry into these and other points, he has to state not only his opinion, but also the grounds on which it is based, in the witness-box. Obviously evidence of this kind must often be essentially difficult in itself, and will present abundant opportunity for the exercise of the forensic skill of astute counsel. Nor does the training or habits of thought of the medical witness prepare him for contending on equal terms with the advocate at the bar. The former, in the investigation of disease, searches for facts, considers the import of symptoms, in short, tries, as it were, to find out the truth, and thus cultivates the judicial faculty; while the latter, in the interest of the side which he espouses, heeds not the real merits of the case, but, on the contrary, seeks to damage or destroy any evidence that tells against it, and so not unfrequently endeavours to mystify or confuse the psychological witness in cross-examination. In relation to this point, I desire to express my opinion that in courses of medical jurisprudence it would be an advantage to pay particular attention to the giving of evidence: that, for instance, imaginary medico-legal trials should, so far as the medical evidence is concerned, be carried out in the presence of the students, some of them being placed, as it were, in the witness-box, and examined accordingly. If this were done, the knowledge so acquired might perhaps save the practitioner from some unpleasant experiences, in at least the early part of his professional career.

But the medical witness is also not unfrequently placed at a grave disadvantage in criminal trials through his in-

complete acquaintance with facts bearing on the mental condition of the panel. Thus, should he be a witness for the crown, he may learn for the first time, when in the box, by the statements of the counsel for the defence, circumstances which seem to indicate insanity in the prisoner at some period of his life, and be asked to give an opinion regarding them, and their bearing on his mental state at the time the crime was committed. Or, even though he may be fully aware of facts which will afterwards be brought before the jury in the evidence for the defence, he is not allowed to adduce them in support of any opinion he may give, however important their bearing on the question may seem to him, seeing that, at the time of his examination, which is usually at the close of the evidence for the prosecution, these facts have not yet been submitted in court.

Besides these causes of defect in medical evidence, it is in some cases obviously partially due to the imperfect acquaintance of the witnesses with the forms of insanity, and even sometimes with the meaning of the terms which are used in their definition. This again is traceable to the prevailing neglect of the study of mental disorders, to which I have already alluded.

Many plans have been submitted with a view to prevent the unseemly collisions of medical evidence in courts of law; but more especially in order properly to obtain the advantage of the light which skilled medical opinion is fitted to throw on cases where the plea of insanity is advanced. These I shall not now stay to discuss, but shall content myself with little more than stating the one which seems to me the most likely, if adopted, to yield satisfactory results. It is this—Let the crown appoint a committee of three medical men skilled in mental disease, in whom they have confidence, and who shall hold their appointments independently of either the prosecution or defence. It shall be the duty of this committee to examine the prisoner as often as may seem necessary, and to report respecting his mental condition, in any case where it is intended to plead insanity in his behalf at the trial. And, with a view to the completeness of their

report, it would be proper to require both sides to submit to this committee the evidence which they intend to lead either in support of this plea or against it. After reading their reports in court, the medical men might, if thought desirable, be put into the witness-box, and be questioned respecting it by the opposite counsel. It should not be competent for either side to bring forward any other skilled witnesses merely to express a professional opinion in the case. The objections to this plan are, first, that it apparently places some restriction on the freedom which the defence at present enjoys, in adducing any evidence whatever, which may be supposed to favour the accused; second, that the committee holding their appointments from the crown, might be fancied to have a bias, perhaps insensibly, towards supporting the view of the prosecution; third and mainly, that this committee would, to a large extent, usurp the place of the jury, as the finding in their report would unduly influence the result of the trial. While by no means seeking to estimate lightly such objections, I would simply express my conviction that the advantages of a committee of this kind would distinctly outweigh the disadvantages attending its action.

But whatever opinion may be formed of this or any other plan, there is little prospect at present of any change in the existing practice. I shall therefore, before closing this portion of my subject, make a few observations on the giving of evidence and also on the examination of the accused; it being understood that my remarks have special reference to criminal cases. It is necessary to have, if possible, three interviews with the prisoner before the trial, and in some cases more may be required. The first one should be at least for an hour, and the second should not be much shorter. I have seen a medical man's evidence much damaged by the admission he was obliged to make in the witness-box, in answer to a question from the counsel for the defence, that he had only spent about ten minutes in examining the panel. I have found it most satisfactory to conduct the examination when no one else than the prisoner was present; he is then

more ready to express himself freely and unreservedly than when any of the officials or another medical practitioner is in the room. Perhaps, however, the agent on the side with which you are associated may require you to make one examination conjointly with other medical witnesses on the same side, so as to insure as great a uniformity of opinion as possible. In any doubtful case it is desirable to visit the prisoner unexpectedly, late in the evening or at night. It sometimes happens that insanity, which can scarcely be detected during the day, is quite obvious at night. A female patient at present under my care is a good illustration of this condition. During the day she is usually calm and nearly rational, but after about nine or ten at night she becomes excited and talks aloud, maintaining a conversation with herself, just as if some one were beside her, though there is no one there. I have often stood outside her bedroom and listened to these conversations. Questions are put and answers given in two different tones of voice, the one being deep and masculine, the other feminine but much shriller than her own natural voice. Both voices always maintain their respective individualities in this nightly drama. In alcoholic insanity this nocturnal exacerbation is occasionally very marked. The hallucinations of sight and hearing which are so characteristic of it may scarcely, and even not at all, trouble the patient during the day, but when night comes, and particularly if he be alone, they may assume a most vivid reality and prompt to dangerous action, either suicidal or homicidal, or both.

In almost all cases notes should be taken of the exact replies of the prisoner to your questions at the time of examination; it may be important to quote his own language in the report of the case you may be asked to draw out, or at the trial. Your inquiries should extend over his whole career and include what we may call the medical history of the family to which he belongs, with a view to ascertain whether there exists a hereditary tendency to insanity or other of the neuroses. Particular search should be made after epilepsy, as sometimes the fits occur at night, or in the

form of *petit mal*; and criminal acts have been committed by the sufferer during the brief mental derangement, which occasionally follows or precedes any form of the disease, or is substitutionary of the convulsive fit. The physical signs of general paralysis should also be looked for, as sometimes in the early stage of that disease, and owing to it, serious crimes are committed, and the medical witness may, through his knowledge of the import of a slight tremor of the upper lip, a difficulty in the articulation of certain words, and an inequality of the pupils, be able to state confidently in court, as was done lately at a trial in England, that the probably strong and vigorous looking man at the bar is, labouring under an incurable disease from which he will die at no very distant date.

In the examination of the prisoner it is important to bear in mind that he must not be asked if he has committed the crime of which he is accused. Medical men have in some cases obtained admissions of guilt in the course of their examinations, and have been obliged to reveal them in the witness-box; for the medical witness is in no way privileged more than others. This has brought upon him the censure of the court for having made such inquiries. Should the crime be murder, you may, and, I think, ought to inquire respecting the prisoner's views on the lawfulness of killing in the abstract, but must avoid asking if he was the perpetrator of the deed in question.

Every legitimate effort should be made to obtain full information of all the facts, and particularly those likely to be submitted at the trial, which may throw light on the mental condition of the prisoner previous to the criminal act. There is usually no difficulty whatever in obtaining this information, so far as it favours the side on which you are engaged, but it is not always easy to ascertain the facts which support the views of the opposite side. Sometimes this is due to the agent on your own side not deeming it prudent to communicate important information which tells against *his* view of the crime to a medical man whose opinion on the case has not yet been expressed, and some-

times to his not being himself fully aware of the evidence which the opposition is in possession of, even though the agents on the one side are at liberty to precognosce the witnesses on the other side. Speaking for myself I cannot say that I have had much to complain of in respect of this in the course of my experience. I have usually been a witness for the Crown, and have generally found the Procurator-Fiscal ready to allow me to peruse the precognitions of witnesses whose statements had reference to the mental condition of the prisoner, even though these might be favourable to the defence.

As soon as you have arrived at a conclusion respecting the alleged insanity of the accused, you will be expected to apprise the agent respecting its nature. I am in the habit of expressing this opinion briefly in a document by itself; but along with it, in a separate paper, I send a statement detailing and explaining the grounds on which the opinion is based. I need scarcely say that whatever side you may happen to be engaged on, your judgment must be unbiassed. A medical witness must not be a partizan; his duty is simply to ascertain the truth respecting the medical question submitted to him, without regard to the result. Should your conclusion be opposed to the views or theory of the agent who has employed you, probably you may not be called as a witness, or possibly your evidence may then be secured by the opposite side, if they learn the nature of your finding. This, though you may regret it, cannot be avoided; you have the satisfaction of thinking that you acted in accordance with your conscientious convictions.

In the witness-box you should use, as much as possible, plain, non-technical language, remembering that the jury, as a whole at least, cannot be expected to know the meaning of the scientific terms relating to insanity. Your replies should, as a rule, be brief, and ought generally to be strictly confined to the points in question. I do not say that they ought invariably to be so, as it sometimes happens that questions are carefully framed so as to bring out only one side of your opinion, and should the counsel on the other

side in his examination not advert to the subject imperfectly elucidated, or possibly not examine you at all, serious injustice may be done to the case. This once happened in my experience: the advocate for the defence did not put a single question to me, and, so imperfectly did I feel had my opinion been brought out in the examination-in-chief, that I deemed it requisite to ask to be again placed in the box that I might have an opportunity of fully expressing my views. This request was granted. It is necessary then to be on your guard lest through the skill of counsel on the one side, and perhaps owing to the want of skill of counsel on the other side, you should be prevented from doing full justice to the case.

You need scarcely expect to pass through the ordeal of a cross-examination successfully unless, besides knowing thoroughly the case with which you are engaged, you are well acquainted with the *legal* meaning of the ordinary terms used in reference to the insane. In illustration, I may mention a case that occurred a good many years since in Glasgow. The medical witness was asked if he considered the panel to be of sound mind. That gentleman, who I think was of opinion that the accused was somewhat imbecile, replied, "No, not altogether." Counsel then said, "You consider, in fact, that there is unsoundness of mind?" to which the witness replied, "Yes." The next question was, "Do you think he is insane?" Answer—"No, not insane." The counsel saw his advantage and immediately said, "You have told us that there is unsoundness of mind but that yet he is not insane, will you now explain: what is the difference between insanity and unsoundness of mind?" The witness who did not seem fully aware that in Scottish law they are synonymous terms, attempted an explanation, but became confused and broke down so thoroughly that he was under the necessity of leaving the box.

In closing this part of my subject, I would only further remark that you need not be at all surprised though your evidence should be not only imperfectly but even erroneously reported in the newspapers. That is by no means uncom-

mon, and medical men are occasionally subjected to a good deal of injustice and annoyance through incorrect reports of their professional evidence.

I shall now make a few remarks on the plea of insanity. In criminal cases—and it is to them again that special reference will be made—this plea may be advanced; first, in bar of trial; second, in bar of sentence; third, in bar of punishment. In capital charges it is not readily admitted in bar of trial; for, unless the prisoner be very obviously insane—maniacal or distinctly demented—and to such an extent that he cannot form a conception of the nature of the charge, the case usually goes for trial. The grounds on which decisions have been arrived at when this plea has been the defence have varied greatly at different times. In fact, in no class of criminal charges has “the glorious uncertainty of the law” been more strikingly manifested. Cases seemingly parallel, so far as the evidences of mental unsoundness or of the responsibility of the agents for their acts were concerned, have had opposite results: in some the panels have been found guilty, and executed; in others the plea has been sustained, the sentence being confinement in a lunatic asylum during Her Majesty’s pleasure,—this being usually, but not always, equivalent to confinement for life. Many cases might be quoted in proof of this statement, but time will not permit, and I must content myself with referring you to the records of medico-legal trials in works on jurisprudence. The discrepant conclusions in these cases have undoubtedly been largely due to the difference in the tests of insanity propounded by the various judges in their charges to the juries. But while there has often been this striking want of harmony among judicial deliverances, it is evident, when a general survey is made of these opinions from the bench, there has been, upon the whole, and especially during late years, a marked change in their character. There is now—it is satisfactory to be able to say—greater harmony between them and the facts of psychology than formerly. This will appear by a few illustrations. In 1723, Arnold, a lunatic, was tried for

shooting at Lord Onslow. The presiding judge, in his charge to the jury, said: "It is not every kind of frantic humour, or something unaccountable in a man's actions, that points him out to be such a madman as is exempted from punishment; it must be that a man is totally deprived of his understanding and memory, and doth not know what he is doing, no more than an infant, than a brute or a wild beast; such a one is never the object of punishment." You will observe that at that time nothing but a total deprivation of reason would save any one from suffering the full penalty for criminal acts. Partial insanity in any of its varied forms was no palliation, however clearly it might be evident that the offence was the direct product of delusion, and as much the offspring of disease as though it were the action of a raving maniac. Coming down to the year 1800, we find that in the case of Hadfield, who fired at the King in the Drury Lane Theatre, this doctrine, though urged by the Attorney-General, was not adopted, and the panel was acquitted on the ground of insanity—the act having been due to delusion, though the derangement was only partial. This was a great advancement on the opinions which ruled in Arnold's case, but it does not appear to have been general or, at all events, lasting; for we find that in 1812 Bellingham was tried, convicted, and executed for the murder of Mr. Spencer Percival, though the crime was the fruit of insane delusion. The criterion of responsibility submitted to the jury by Chief Justice Mansfield in this case was the capability of distinguishing between right and wrong, not, let it be observed, in reference to the particular act, but in general. Had the test been applied to the charge on which the prisoner was being tried, he would not have been condemned, as assuredly the delusion which prompted the act rendered him quite unable to distinguish properly between right and wrong in regard to it. The next case to which I shall refer was one that caused much excitement throughout the country, and was the means of strongly directing public attention to the condition of the law respecting insanity associated with crime. It was that of M'Naughtan, who, in

1843, shot Mr. Drummond in the lobby of the House of Commons, mistaking him for the late Sir Robert Peel. M'Naughtan laboured under a monomania of suspicion: he fancied that he was being dogged on the streets, and that different persons, of whom Sir Robert Peel was one, had conspired to ruin his character. This had instigated the murderous attempt which resulted fatally. Notwithstanding the fact that he was not obviously insane, and had transacted business a short time before the deed, he was acquitted on the ground of insanity. The House of Lords participated in the feeling of alarm which this decision gave rise to throughout the country, and thereupon proposed to the English judges a series of queries relating to responsibility and unsoundness of mind. Their replies have been considered to embody the law on the subject, and since then have been the basis on which the great majority of cases have been decided, where the plea of insanity was advanced. Briefly put, these answers state that it ought to be proved that at the time he committed the alleged crime the prisoner was not conscious of right or wrong, before the plea is allowed. But this is qualified by the somewhat ambiguous observation that if the delusion under which he laboured were only partial, he was equally liable with a person of sane mind; and further, that if he laboured under the idea that he was redressing a delusive grievance, he was still liable to punishment. It will be observed, that a consciousness of right and wrong at the time of the act is stated to be the test of responsibility, and this is probably a sufficient criterion in the great majority of cases if it be strictly applied, for it covers not only those where the accused are totally bereft of reason, but also those others where an insane delusion has prompted the criminal act, as no one so instigated can possibly have a proper conception of right and wrong. In this legal dictum there is a marked change when compared with the opinions to which I have referred; for even in the last and most advanced of them, as was shown, the test was the power of distinguishing right from wrong in the abstract, without reference to the

crime with which the prisoner is accused—whether, for instance, in answer to questions, the panel could tell that theft and murder were wrong acts, punishable by the law, and, if he could, holding that this knowledge established his guilt, without giving any weight to the consideration that at the time of the criminal act he was actuated by delusion or impulse, the result of disease.

But although these celebrated “Replies” are still considered the standard according to which the decisions in medico-psychological trials should be determined, taking them as a whole, and considering the one reply as modified by the others, they do not fully represent the state of our information respecting the manifestations of diseased mind. This fact would seem to be understood in some degree by the general public; at all events their moral sense has revolted in some cases from deciding in accordance with the principles of the “Replies.” Thus in the trial of a man named Bramfield, who killed a fellow-labourer about four years ago in the North of England, the jury returned a verdict of insanity in opposition to Mr Justice Brett’s charge, owing to their belief that, though the prisoner not only knew right from wrong, but was intelligent, free from apparent delusion, and could earn his livelihood, his mind had been weakened by a previous attack of insanity, and the act itself had been due to homicidal impulse. The result of this trial appeared to give very general satisfaction.

But in some recent trials the bench itself has not been ruled by these criteria of responsibility. In illustration I shall refer briefly to the cases of Macklin and Barr, who were tried on the charge of murder at the same circuit in this city in May of last year; the presiding judge being the Lord Justice Clerk. As I was one of the medical witnesses in Barr’s case, I think it well to say at the outset, with the view of preventing any possible misapprehension, that in my judgment the verdict and punishment were just and merited, and that any other conclusion would have involved a sad miscarriage of justice. The observations of Lord Moncrieff on the tests of insanity and responsibility in his

two charges to the juries are of great importance, and seem to me distinctly to mark progress in the legal conception of mental unsoundness. The following quotation is from the newspaper report of his lordship's address in Macklin's case:—"What were the indications from which unsoundness of mind may be inferred? He could lay down no general test which could be applied to solve such a question. At one time lawyers were apt to avoid all difficulty by inquiring whether the prisoner knew right from wrong; and as, in point of fact, except in acute mania or idiocy, there are very few lunatics who do not know right from wrong, in the sense of being capable of forming and even acting on the distinction, much unreasoning inhumanity had been the result of this unscientific maxim. He would suggest to them what he thought a far safer and a more constitutional and a more reasonable ground. Soundness or unsoundness of mind was a fact which had to be judged of not as a question of law or of science, but on the ordinary rules which one applied in daily life. If it turned out that a man was able to conduct himself with propriety in the ordinary relations of life, and was not excluded from the confidence of his fellow-men by reason of distrust of his sanity, they had advanced not the whole of the journey, but nine-tenths of it towards their conclusion." And at an after part: "He had said that they had advanced nine-tenths on the journey towards a solution, but there was a further step, on which the difficulty and the importance of the case rested—if this man laboured under an insane delusion." His lordship's observations in Barr's case were much to the same effect. "I shall now state," he said, "what I think are the only propositions necessary for me to state in order to guide your judgment in this matter; and it might almost be said of them, as I laid down in the case yesterday, that the question of sanity or insanity, soundness or unsoundness of mind, is simply a question of fact, to be judged of by you upon ordinary rules, and the intercourse between men and men in daily life." And further, "The true question to consider is whether this man's mind was diseased."

There is here a distinct admission that the criteria of responsibility by which the bench "at one time" instructed juries was erroneous, and it is certainly satisfactory to find this so frankly stated. We fear, however, that the tests proposed by his lordship in place of the discarded ones will be found insufficient in some of the most important cases that come before courts of justice. Thus, in M'Naughtan's case already referred to, it was proved, as I have said, that he had transacted business shortly before committing the criminal act. Business capacity, therefore, fails here as a test, though the supplementary criterion delusion is applicable. But take the following case which was under my care a number of years since:—An affectionate mother, reduced by nursing but still able to attend to her domestic duties, was dismayed to find that a strong temptation to kill her infant, whom she tenderly loved, had arisen in her mind, and fearing that she might give way to the terrible prompting, she consented to enter the asylum. There was a degree of melancholia present, but no delusion was apparent. Her general health rapidly improved, and after a few weeks' residence she returned to her family, the homicidal disposition having passed away. If the impulse had overcome her feeble powers of resistance and she had killed her child, neither of the tests referred to would have saved her from suffering the extreme penalty of the law, as until her entrance into the asylum she had been engaged as usual in household work and never manifested any delusion. At the same time, had she been hanged, there would certainly have been another instance of "unreasoning inhumanity." I might quote many more equally striking examples of the homicidal impulse from medico-legal works, but time will not permit, and besides I prefer drawing on my own experience for illustrations. A patient now under my care has frequently an almost overpowering tendency to destroy anything near her—it matters not what; not to kill, fortunately; though occasionally it is to commit suicide. She once said to me, "I feel that if it were possible I could tear the whole building down;" and repeatedly, when busy at her work,

“I’m just doing this to keep me from breaking the windows.” She has always been able to master her morbid impulses while in the City Asylum, but many years ago, when in another institution, they proved too strong for her, and in her maniacal fury she broke about fifty panes of glass, besides a large number of dishes, in the course of a few minutes. Some years previous to that outbreak she had an attack of acute mania, but her recovery, so far as concerned the intellect, seemed perfect. There exists in her a strong hereditary tendency to insanity, and a large number of relatives are or were affected with the same terrible malady. During the many years she has been under my care, I have found her an active, industrious, and intelligent woman, constantly free from delusion or other evidence of distinct intellectual derangement. Now, had this patient been at large when the morbid impulse overpowered her, neither of the tests would have shielded her from punishment. They are equally defective in another important class of cases, the character of which will be understood by the two following illustrations:—About four years ago a male inmate of the City Poorhouse, nearly 60 years of age, who had been subject to epileptic seizures for many years, at intervals of four or five weeks, one day in a large ward containing many patients, when lying in bed owing to some temporary ailment, suddenly began to swear aloud without the slightest provocation, then cried for a knife “to stick some of them,” and ultimately sprang at the patient next him. With some difficulty he was restrained, and I was sent for. In about a quarter of an hour after the commencement of the seizure I reached the ward and found him rather confused in mind, though he answered all my questions relevantly and sensibly. He was very much surprised when told how he had acted, and assured me that he had no recollection whatever of the circumstances. Another patient, who is subject to epileptic vertigo, on two or three occasions while under it has walked automatically down the stair and along the street for thirty or forty yards, performing different acts, though quite unconscious all the time; these attacks lasting from two to three minutes.

Throughout his illness he has continued to attend to his business, and has always been entirely free from delusion. There are a good many instances of this kind on record: Dr Joseph Coats has lately recorded two very interesting ones, and I have published a striking illustration in a recent number of the *British Medical Journal*. Now, if any of the patients were to commit a criminal act during the brief period of these attacks, it does not appear that Lord Moncrieff's tests would be applicable if, to repeat his lordship's words, "he was able to conduct himself with propriety in the ordinary relations of life," and if he "did not labour under insane delusion." Now, in many of the cases the sufferers do conduct themselves with propriety, follow their occupations, and are also free from delusion; there is simply a short suspension of consciousness, through which, however, they are entirely irresponsible for their actions while it lasts.

When Lord Moncrieff said that the true question to consider was, whether the mind is diseased, and that there is no general test of mental unsoundness, he stated opinions with which the most experienced medico-psychologists will fully agree. It is, therefore, I submit, unfortunate that the bench should continue in most cases to assume that such tests do exist. It would, I think, be more correct, more in accordance with the facts of nature, to avoid laying down definite criteria, and simply to hold, unless proof can be submitted that the mind is in a state of disease, or was so at the time of the alleged crime, to which that crime may be fairly attributed, that the plea of insanity should not be sustained, and that consequently the accused is a responsible agent. What that proof should be cannot, however, be stated, as it must vary according to the distinctive features of different cases.

III.—THE DISEASES OF CHINA; THEIR CAUSES, CONDITIONS, AND PREVALENCE, CONTRASTED WITH THOSE OF EUROPE.

By JOHN DUDGEON, M.D., *Pekin.*—(Continued.)

SPEAKING of beverages leads me to say a word about tobacco and opium. *Tobacco*, unknown in the last dynasty (1368-1644), or only to a very limited extent towards its close (the middle of the 17th century), is now nearly as universal as tea, and has spread with marvellous rapidity. It was a crime punishable with death, the same quaint reason urged by Sovereigns of Europe and Popes of Rome being urged by the Chinese Emperor, namely, that men appeared like devils emitting smoke from their mouth and nostrils. Now eighty per cent. of the whole population of both sexes, above twelve years of age or so, may be seen with the pipe. It is hardly every out of their mouths, especially among the women. The native tobacco is mild in the extreme, and probably few bad effects result from smoking it; at any rate these are reduced to a minimum by the extensive use of the water pipe, which seems worthy of imitation by smokers here for the coolness and comparative purity obtained. The water absorbs a large proportion of the nicotine and other deleterious properties of the weed. As smoked by our people, some of these constituents travel along the stem of the pipe into the smoker's mouth and sometimes down to his stomach. We hear complaints of dyspepsia, dryness of the mouth, sore throat, amaurosis sometimes, various nervous diseases, long retention of images on the retina after the objects have disappeared, affections of the heart, irregularity in its action producing faintness, &c. Cigars are worse than pipes on account of the more ready and rapid absorption of the nicotine. Chewing, which seems almost expelled, at least from good society, is manifold worse than smoking; snuff-taking is very common among both Mongols and Chinese; the snuff being usually highly flavoured with various odoriferous substances. I cannot say I have seen any bad effects from tobacco smoking among the Chinese. If our people will smoke—and I suppose it

may be useful in some cases in preventing the bad effects of over-action and extra excitement of the heart—I would at least advise them to use long clean clay pipes, to abjure the black cutty or blackened meerschaum which have lost all their absorbent power.

I am sorry I cannot speak in the same terms of *opium*, of all our luxuries the surest destroyer of health, property, position, and life; of all our vices the most insidious and most difficult to throw off; one of the quietest and least obtrusive, yet that which beyond all others tells most seriously in the long run on national life and prosperity. This is hardly the place to enter a protest against opium consumption, but in considering health and disease among the Chinese, it is impossible to shut out this factor. Whole chapters, if not volumes, might be profitably taken up with the consideration of this subject in all its various aspects, but the medical is alone of interest to us at present. The effects of opium accord well with the Chinaman's natural temperament, which leads to patience and love of peace, rather than rude blows and fighting. There is no just comparison between the man who indulges in excess of wine and the one who takes a pipe of opium; the latter is more like the habitual dram drinker, whose depraved and vitiated appetite now craves for the powerful stimulant. Opium is preferable to spirits, for it does not brutalise; it does not excite the fierce passions of men, but by enervating, soothes them. The habit is easily acquired; a fortnight's regular use and it will require an almost super-human effort to cast it off. This is one of its most characteristic peculiarities. The gnawing agony of the unsatisfied craving is maddening; physical strength is prostrated; the mind weakened, and a few seconds after the opium pipe has touched his lips, the smoker is relieved for the time being of all his suffering. He anticipates his craving and flies to the stimulant; if deprived beyond the usual period he gapes, yawns, and discharges mucus from his eyes and nose, and is perfectly miserable and good-for-nothing. There are rare cases of great determination throwing off the evil habit; body

and mind are usually too weak for the execution of the purpose. The curse of the habit, like drunkenness, falls with special severity upon the poor; half of the labouring man's wages are spent on this single article. We can imagine the misery at home—his constitution ruined, family reduced to poverty, situation and character lost, beggary his inheritance, and thieving his portion. He brings a variety of physical evils upon himself, dyspepsia, inveterate constipation, dysentery and diarrhœa of an intractable character threatening the life of the confirmed smoker who would renounce the vice, and too frequently it is so without the renunciation of the pipe; spermatorrhœa follows with its long train of evils affecting his posterity and the population of the country. I cannot take time to pourtray all the physical evils which we find following in the wake of the smoker. The good he derives in chest affections, such as cough, chronic bronchitis, ordinary diarrhœa and dysentery, when not caused by the drug itself, are for a time at least substantial gains, although I fear it renders the radical cure of many of these affections in the long run more difficult, in reducing vitality and the resistance of the body to deteriorating influences. This part of the subject might form a paper itself. Fortunately for China none of the other narcotics have as yet obtained a footing, such as chloral, chlorodyne, chloroform, ether, and absinthe, that regularly carry off so many victims in Europe, and are sapping the constitutions of large numbers of the very best of our people.*

Food.—From drinks we pass naturally to consider next the *food* of the Chinese. Few countries produce such a variety of cheap and good foods as China, and fewer still that will bear comparison with her people in the art of cookery. Their food is of a mixed kind, although the vegetable diet from its cheapness prevails. The chief animal food eaten is pork, combined, as in the North bordering on

* See paper by the writer, read at the Social Science Association at Liverpool, Sept. 1876, on "Some of the Physiological Actions of Opium in Relation to Health."

the grass lands of Mongolia, with mutton. Pigs and ducks are their favourites, because easily reared, and the flesh is more savoury and contains much fat. Earth worms and snails, rats, kittens and puppies, though frequent in the pages of travellers, are fortunately rare in Chinese markets and on Chinese cookstalls. The cow or ox being regarded as semi-sacred (because used in sacrifice to the Supreme Being at the Temple of Heaven, and also used in agriculture), comparatively little beef is eaten. In seasons of drought edicts are issued against the slaughtering of bullocks. If the filthy habits of the pigs in China induced trichinæ, the most disastrous results would ensue, for pig life there is simply revolting. Rice, or rice and sweet potatoes, flavoured with pickled vegetables or salt fish, is the staple food at Amoy. At Newchwang, in the far north, it is principally boiled millet, a simple, cheap, and nourishing article of diet, possessing all the essential elements of nutrition, occasionally partaken with vegetables. Six people can live well upon this fare for four dollars monthly. Dr Watson there says, all who can afford it drink a little coarse spirit, but so sparingly that it is rare to find a drunk person. It is much the same all over China—rice predominating chiefly in the south—and rice, alternated with flour or millet, among the better classes in the north. These are combined with oils, fresh and salted vegetables, which supply in abundance all the elements for healthy nutrition. It is remarkable they should have hit naturally upon such a diet; the leguminous seeds supplying the nitrogenous matter, and animal and vegetable fats remedying the want of fat in the rice. This diet therefore seems to give them the four essentials for the proper maintenance of the body. Of course there are vast multitudes to whom rice would be a great luxury, and whose diet consists of little more than sweet potatoes and salted vegetables.

The Chinese partake usually of two meals, one early in the forenoon and one late in the afternoon. Late heavy dinners and suppers, with copious vinous potations, are utterly unknown. The hour for dinner parties is usually

two or three o'clock in the afternoon, sometimes earlier. Dyspepsia is one of their most common maladies. The vegetable food is bulky, and the quantity of raw and unripe fruit and vegetables which they consume, combined with so much hot water and tea, confections, pastry, &c., are well calculated to produce dyspepsia. This indigestion exists chiefly in the form of flatulence, with some disturbance necessarily to the heart. They usually style the various forms as a blocking up of the entrance to the stomach, cardialgia, or more frequently by "liver air." Dyspepsia seems far too common among so poor and abstemious a people. One facetious writer has called it "The remorse of a guilty stomach." One of these Chinese dyspeptics complained once to one of our brethren, saying that she could eat nothing, and was subject constantly to pain, and he found that she had just eaten three or four hard boiled eggs—then had taken some Chinese medicine—then several potions of hot water, and at that very moment was steeping the red wood of her rouge powder box for a final draught!

Foreigners in China, and the same holds good of Europeans at home, err on the side of eating and drinking too much. It is remarkable that every animal but man keeps to one dish, and some one has said that as many dig the grave with their teeth as with the tankard, and another that if the secret of rejuvenisation be ever discovered, it will be found in the kitchen. I should be far from advocating a too meagre diet, especially in the climate in which we live in China. By experience, in winter at all events, and in the north, we find our wants are even greater than in England. But there can be no doubt, I think, that the excessive use of animal food is one of our national weaknesses. It has assumed an importance which it does not deserve. It is with some the main article at all meals. All the conditions of a good nutritious diet may be found in what is much cheaper. Need I instance good porridge and milk in our own country. The old Roman gladiator's chief food was barley cakes and oil. Our modern *meals* have ceased to indi-

cate what is doubtless the origin of the word. Full animal diet three times daily, combined with various liquors, must induce many diseases, and predispose if not excite to inflammatory attacks, from all of which the abstemious Asiatic is free. If this kind of diet be combined with want of exercise, and the persons living in rather a high temperature, as is the case with many of our Europeans at the open ports in China, I fear it is but natural we should look for some of the maladies already mentioned. I have read of the definition of an Englishman in India, as an individual who eats beef, drinks brandy, and has no religion; or as a witty Irish medical man, a friend of my own, once put it—"Europeans come to China, and they eat, and they drink, and they drink, and they eat, and then they die, and afterwards write home that the climate killed them!" The temperate in eating and drinking, and who exercise discretion in exposing themselves to the sun's rays in tropical countries, keep their health as well there as at home. The following are a few of the Chinese precepts in dietetics: Do not offend in quantity—breakfast early—make a hearty meal about noon—eat slowly and masticate thoroughly—do not gratify the appetite so as to rise from the table quite satiated—sup betimes and sparingly—let the food be tender and well-dressed—do not sleep till two hours after taking food, and begin meals by taking a little tea. It is recommended to avoid smelling musk and young orange blossoms, which contain imperceptible insects, for fear of such vermin finding a way up to the brain. The air is full of imperceptible germs of various small insects which we suck into the stomach with our breath, but they cannot be hatched there for want of a fit medium, whereas the insects which lay their little ova in the mealy cup of flowers, may be drawn up by the nose with a ferment proper to hatch them. Food, moreover, should be taken a little warm, with the view of keeping up the internal warmth, for the radical moisture is apt to be weakened and evaporate in water and sweat. In summer, especially, are the spirits much spent and the kidneys weakened. This is a quotation from a book on the Art

of procuring Health and Long Life, published in 1697; translated by one of the Jesuits; to be found in Du Halde, II. p. 236, and as you will observe broaching the germ theory.

Clothing.—A few remarks on *clothing* come next for consideration. In the material of her fabrics and the shape of her clothes, for both sexes and all ages, China will not suffer in comparison with other nations. In some respects she has the decided superiority; her clothes are well adapted for the climate and the character of the people. The dress, which is of the most becoming and simple kind, can be adapted with remarkable ease to quickly altered atmospheric conditions, and in this respect they teach us a useful lesson in exercising great carefulness in adapting *our* clothing to sudden changes of temperature. The sameness of our clothing appears very ridiculous to them. The Chinaman's material is changed with the changing season, but the fashion never changes. All Oriental countries are similar in this respect. In winter to strip a Chinese of his clothes might be compared to skinning an onion—the layers are so numerous, and yet his dress remains the same. Without changing the entire suit, he takes off or puts on as occasion requires. In the spring and autumn this is particularly necessary. The morning and evening dress is hardly suited for midday, and *vice versa*. The black-haired race is destitute of shirts, flannels, and anti-cholera belts. Their style of dress, coupled with their style of living, renders some of these foreign requisites unnecessary. Our abdomens are not half so well protected from sudden cold, &c., as those of the Chinese. Diarrhoea, dysentery, colic, &c., are frequently prevented in summer among our Europeans, especially new-comers, by the adoption of such belts or bandages. How much mischief is created by our failure to clothe ourselves *seasonably*? A good old rule was, not to lay aside winter garments before a warm May, and to put them on before a cold November. Our people certainly err greatly in leaving off winter clothes too early, and not putting them on early enough in autumn. Adjusting dress, according to the vicissitudes of the weather

here, in this ever-varying climate, where often "in one monstrous day all seasons mix," is, though difficult, a matter to be carefully attended to if we are to enjoy good health. One has said that "if we are careful, glass will last as long as iron," and Boerhaave has remarked that "only fools and beggars suffer from cold; the latter not being able to procure sufficient clothes—the former not having the sense to wear them." Our dress is rendered utterly unsuitable if almost any part of it be touched. We cannot accommodate it to the varying changes of a variable climate like ours, without destroying its harmony in most cases. I need not refer particularly to our errors of dress, some of which have been held up to ridicule, and deservedly so by the Chinese, such as tight lacing, tight and stiff collars, neckties, sleeves and vests, cravats, tight and hard boots, high heels, the long trailing dresses of the gentler sex, the low necked dresses and short sleeves, or rather no sleeves of evening parties; a practice, let me add, which cannot be supported by one single argument, and which, coupled with heated rooms, iced drinks, hot beverages, chilly lobbies and halls, and all in our winter weather, is most absurd and is certainly the fruitful cause, sooner or later, of much bronchial and pulmonary mischief. There is also exposure of the chest in men—insufficient protection of the abdomen where waist-coat and trousers meet—the dark clothes worn in summer—the crape and black mourning so generally and so long worn in the light of devotion to the departed—bad ventilation through waterproofs, galoshes, and many other points; not to speak of the more than questionable good taste displayed in short jackets, cut-away coats and tight fitting trousers. The Chinaman's long robes, which are the rule, button close up to the neck, and stretch down almost to the feet, and envelope the whole body. A painting or sculpture, which exposed anything but the head and perhaps the hands, would be set down as barbarous and gross. In summer, a long cotton or silk robe is the chief part of the dress; in winter, cotton-wadded garments among the middle and lower classes, and the various furs among the higher classes

prevail. Nothing could be more neat and tasteful than the ladies' dresses in China, whether of the higher or lower classes. Crinoline and chignons have always been a mystery to them. In our campaigns in hot climates, the thick coat and heavy hat, or small forage cap, have destroyed by sunstroke and apoplexy, more lives than the enemy's swords or bullets. Chinese tailors, let me say, sit *at* their boards, and so are saved from those troubles to which the sons of the needle with us are exposed from their stooping and cramped position. And as to their shoes, the top and sides are made of calico, silk, satin, or velvet, and the soles of several layers of thick paper, rags or felt, protected sometimes by a thin outer sole of leather. They are soft and easy to the feet, and these plagues of over-civilisation, corns and bunions, are almost unknown. The winter shoe is padded with cotton. The Chinese can dispense with boards in their houses, as from the thickness of the sole, one or sometimes two inches, they may be said to carry their flooring constantly with them; it raises them above the dirt, damp and wet. These thick soles suit their dignified gait, and the only evil which I have found from their use, is the necessity for constant paring of the toe nails—a regular craft of chiropodists existing in all Chinese towns for this purpose. It can be readily understood that ingrowing nail and the evils of overparing frequently present themselves. Chinese police in the winter are supplied with large sheepskin coats which keep out the cold thoroughly. In regard to head-dress, in summer they wear generally white straw hats, which permit a current of air to pass freely round the head, or they have besides large rims which hang down and shade the face, neck and shoulders. In winter, they wear a cap of silk or satin, or a warm soft one of felt. Many expose their heads to the most violent sunshine without the slightest danger, or protect themselves with only a handkerchief or fan, but such have been born and brought up in the country. Sunstroke, or heat apoplexy, are unknown at Pekin. No cases of these affections have occurred among foreigners, and we have missionaries of the Protestant,

Roman Catholic, and Greek Church, some of whom having adopted the Chinese dress, go about as the Chinese do with impunity without any head covering.

In the precepts laid down in the native work already referred to for regulating the actions of the day, it is said, "wind is to the air what anger is to the passions, therefore avoid air coming through narrow passages." The proverb is—avoid a blast of wind as carefully as the point of an arrow—during perspiration do not leave off clothes, or expose yourself to fresh air, and the abdomen, even in summer, is to be protected. Change linen frequently, but do not put on clothing that has just been dried in the sun. Clothes stowed away in boxes with camphor are always freely aired before being put on, because of the anaphrodisiac effect of that substance. The Chinese dress, as a whole, is invulnerable. Can this be said of ours?

Disposal of the Dead.—Let me add a word as to the Chinese *disposal of the dead*. China has no public cemeteries in our sense, if we except, perhaps, such as those of the Eunuchs, of the Emperors of a dynasty, and of the official ground set apart for the interment, at the imperial expense, of children deposited at the mortuaries outside the city gates for the poorest of the people who own no land, and for those who die away from home without relatives. All interments are made in private ground, and none is allowed within the walls proper of cities. It is interesting to note this fact in Chinese civilisation. In respect to this subject we have the testimony of Philologus of Ravenna, the first physician in the west, perhaps, who censures the pernicious custom of having public burying places in populous cities, "which taint the atmosphere with cadaverous streams and frequently occasion fatal distempers. I am astonished" he says, "that the moderns should approve of a practice which the wisest nations of antiquity prohibited by the most solemn laws." Well-to-do families in cities, possess private burying grounds outside, and these are generally covered with grass and planted with firs, cypresses and willows. There is no crowding of the dead. In the country,

among the agricultural classes, every one seems to possess a bit of land, the dead are buried frequently in the cultivated fields of the family. The mounds, although religiously tended, disappear in the course of time under the influence of tillage, the weather, and the encroachment upon them year by year, of the crops. China, in this way, may be said to be one vast cemetery, the whole aspect of the country is so studded with mounds. That we do not live entirely among the tombs is owing to their gradual disappearance from the face of the soil. There is one practice, however, which must be condemned, and that is the habit among the better classes of keeping the dead for weeks, months, and sometimes years and generations, from motives of respectability, feelings of affection, or temporary inability to inter with becoming decency, suitable to their position and rank. In seasons of epidemics, such as cholera, smallpox, or diphtheria, this practice is most dangerous. After death, diviners and priests are called in, and a protracted chanting of prayers, weeping, howling, singing, burning of incense, a beating of gongs, bells and drums, is kept up, and I have seen the most disastrous consequences follow this custom. There is this to be said, on the other hand, that the coffins are of substantial wood, very thick, and are well covered with cement, so that they are in most cases air tight. Cremation is sometimes had recourse to in the case of Buddhist priests of note. European towns suffer from the contaminated air over or near cemeteries. The trees, plants, grass and crops which obtain in China in or around their burying places, must be very useful in the absorption of deleterious substances.

Exercises and Trades.—Such is the state of civilisation in China, that it may be said there are no particular trades specially injurious to life. Their shops, places of business, and such few industries and manufactories as they have, are all carried on out of doors, or in the free open air. As a rule, they rarely have recourse to exercise, in our sense of the word. Among the Manchus, archery is compulsory, and occasionally among the soldiers, we see them practising

fencing, wrestling, throwing the stone, &c. The Chinese and Manchus alike are greatly given to shuttlecock, at which they are most expert, and a great deal of time and pains are bestowed upon bird catching, training, airing, teaching to sing, carrying in cages or on sticks, pigeon flying, and above all, kite flying, pastimes in which adults play the principal part. A most elaborate system of medical gymnastics obtains in China, called *hung-fu*, which is both preventive and curative of disease. We find this system principally practised by the Tauist priests, who were the first alchemists in the world. For centuries they have been in search of the philosopher's stone. They have practised healing by magic, charms, friction, &c., and many books have been written on the art of procuring health and long life. In ancient times, curing by pressure and friction formed one of the thirteen departments of the great Medical College. A most interesting article might be written on this subject alone. The Chinese thus first gave the idea of the *Movement Cure*, which is now practised in most European countries, founded on the anatomical basis of the Swedish physician Ling. The system was first brought to European notice last century, through an article by one of the Jesuits in their memoirs. At the present day curative and prophylactic gymnastics are to a large extent in the hands of the barbers. Besides shaving the head, which, by the by, is done without the use of soap, hot water being only used—and plaiting the queue, they clean the eyes, ears, and nostrils of their customers; they put the eyebrows in order, and perform generally what is known in Europe as macer or massage. By extending the limbs, and gently rubbing them with the palm of the hand, the circulation is promoted, and tone and suppleness is given to the muscles. The operation generally consists of tapping, kneading, pinching, chafing, and pommelling the body all over, producing the most delightful sensations and proving very bracing. I have known adults put to bed every night by their attendants so operating upon them.

Epidemics.—A word as to *epidemics*. And first, *small-pox*.

This disease is endemic; it is never absent, although in certain years and certain seasons it is much more virulent. It prevails most generally in winter, and unfortunately this is just the season, from superstitious ignorant notions, when the Chinese will not vaccinate. Children only in China take small-pox, but *then* all take it, with very few exceptions. The Chinese laugh at the idea of foreign adults contracting this disease. The poison is supposed to be communicated from the parents to the fœtus; all therefore possess the small-pox germ in their constitutions, and only waiting for development—often compared to a flint which requires but to be struck to emit fire. The disease is very fatal. At Canton, in one epidemic, or rather a more than usually virulent endemic attack, 20 to 30 per cent. of the unvaccinated died; at another time, as many as from 40 to 50 per cent. The mortality was very inconsiderable among the vaccinated. There are some fifty or sixty professional vaccinators in Canton. About half of the children get protected in this way. The Chinese have taken wonderfully to vaccination, and it is productive of the best results. They have made its practice coincide with their own theories, and although there is thus an air of mystery thrown around it, the success of the operation is not invalidated. They are most particular in regard to the lymph, the condition of the child, the season of the year, &c., and their great care is rewarded with great success. The whole subject is full of interest, and useful lessons might even here be learned by us, but space forbids our entering upon it. Their rule is to vaccinate in three distinct places in each arm, and the operation may be termed the hypodermic one. It was introduced into China in 1805. In this country we can hardly now realise the blessings of Jenner's discovery. This disease has been known in China since about the end of the 9th century of our era, and therefore much about the same time as in Europe. Inoculation in China has been known and practised since the Sung dynasty (A.D. 960--1127).

Diphtheria existed as an epidemic at Peking in 1866,

and is more or less always present, and proves very fatal. I have known of twenty-four deaths in a family of twenty-six individuals within one month. I have not heard of it elsewhere in China. Our brethren at the ports all note its absence. Its origin goes back to 1821, and is attributed to the import of lucifer matches.

There was an epidemic of *Jaundice* at Peking in the autumn of 1861, and no fewer than 370 applied at the hospital for relief. This epidemic was not owing to any particular article of diet, but to sudden changes of temperature.

Cholera visited China in 1862 and 1863, and was pretty general all over the country. Since that time no epidemics have been witnessed. In 1863, at Canton, from 700 to 1200 died daily for three weeks, and on the 14th July the deaths reached 1500 in twenty-four hours. About 15,000 or 20,000 in the two months in the autumn of 1862 were carried off at Peking, and probably as many at Tientsin. It followed the course of the river, attacking the various towns on the banks, and lastly reached the capital. A severe epidemic occurred in China in 1820-23. At Ningpo, 10,000 were then carried off. It prevailed at Amoy in 1842. It has been known in China, as in India, from time immemorial. It was described 2500 B.C. by the very name which it now bears, viz., *hwo-luan*, an expression meaning something huddled up in a confused manner inside the body, which is evidenced by the vomiting and purging. No doubt the term is also applied to what we designate as English cholera. The Chinese reckon two forms of this disease, the wet and dry, according as there is the presence or absence of vomiting and purging. The latter or dry, is considered the most fatal form.

It only remains now to note a few remarks on some of the other more frequent diseases in China, not already referred to, and first in importance comes *phthisis*. Diseases of the chest are, on the whole, remarkably rare in China. We have already referred to their immunity from heart diseases. Other diseases of the chest, such as pleurisy,

pneumonia, acute bronchitis, are hardly known, and phthisis is far from being so common as in this country. The author of the Middle Kingdom, the oldest resident in China, remarks thus:—"Diseases of the viscera, of an acute inflammatory nature, are not so fatal or rapid, nor does consumption carry off so many as in the United States." At Canton, in the south, Dr Wang says, "phthisis is tolerably prevalent, but by no means so common as in Europe and America." Dr Kerr, many years a missionary practitioner there, confirms this opinion. "It is difficult," Dr Wang says, "to say why it should be so, as the causes which produce consumption, such as bad air, insufficient food and exercise, bad hygiene, &c., must be much more operative, and must exist to a much greater extent here than in the more civilised countries of Europe and America." One thing ought to be mentioned, he says, in connection with this question (if pneumonia and bronchitis have anything to do with the genesis of phthisis), that the Chinese here are not liable to acute affections of the chest. At an earlier period he writes that he saw only one case of acute bronchitis—the only case of acute affection of the lungs in three years. Idiopathic pleurisy and pneumonia he had never seen; and hæmoptysis in men and especially women is by no means such a sure sign and precursor of phthisis as it is in Europe. Chronic bronchitis is common, and so also, to a certain extent, is asthma. I can endorse most fully and heartily every word of this—it is an exact description of our pulmonary practice at the capital. Dr Wang further adds, and I now quote his very words:—"The rarity of consumption among country people, and the greater exemption from it of the labouring class in the city, notwithstanding that they are badly housed, and badly fed, must be attributed to exercise and life in the open air, and I am inclined to think, that their food, though poor in quality, is not, as a rule, insufficient in quantity. Still I cannot quite understand why phthisis is not more prevalent than it is among them, especially the country poor, whose food often seems not more than sufficient to support life.

Scrofula, another form of the disease"—and here I agree with him too—"is often seen in the hospital. The whole subject," he adds, "deserves investigation."

Chest affections at Shanghai are not generally severe, and the cases seen are mostly imported. In Formosa, phthisis is common, but of a very chronic nature. Acute disease of the respiratory organs is extremely rare at Amoy; pneumonia and severe bronchitis are almost unknown among resident Europeans there. Dr Smith, at Hankow, reports: "The natives spit blood with little or no provocation at all, and with but very little evil consequences; consumption is comparatively infrequent," and he suggests "that it may be owing to the great frequency of chronic bronchitis." Dr Reid, also of Hankow, is rather inclined to combat this view, when he considers the great prevalence around him, and in China generally, of the usually recognised causes of the disease. It is certainly staggering to one not thoroughly acquainted with the Chinese constitution, and even then, one is very apt to make one's practice almost unwittingly square with our theories and preconceived notions. After commenting on the various causes that exist predisposing and exciting to the disease, such as we have already enumerated, in the great want of sanitary science, he adds—"if consumption did not follow as a consequence of all this, we should have a result different from what has been observed in other parts of the world, where like predisposing conditions are found." But unfortunately for his argument, we have it frequently in this country, where few, if any, of the causes enumerated at Hankow obtain. His causes, I may as well state, are these—that more than half the town population are debarred from exercise, and rarely, if ever, inhale fresh air; that the country people chiefly live on a vegetable diet, and often partake of it in insufficient quantity for the purpose of nutrition; that the subsoil in many places, and at certain seasons, is saturated with moisture; that the general health is deteriorated by the action of malaria, and lastly, on the strength of his colleague, Mr Porter Smith, that hæmoptysis is acknowledged to be a common occur-

rence. He further adds,—“supposing phthisis to be rare, its rarity cannot be ascribed to the absence of a special tubercular diathesis among the Chinese, since the researches of German pathologists have demonstrated that this disease, in the vast majority of cases, is, at its outset, a cheesy degeneration of inflammatory products, and that this may supervene on any inflammation of the lungs, although most frequently following chronic catarrhal pneumonia; and further, that tubercle is a secondary result, produced by the action of cheesy morbid products on the organism. This tendency to cell hyperplasia and cheesy degeneration is fostered by causes which deteriorate the health, whether acting from without or from within the body, and both classes are frequent enough in China.” It is no doubt frequent—Dr Reid saw 118 cases out of over 5200; but even on his own showing and enumeration of causes, I think Dr Reid would agree with me, that it is after all not so prevalent as we should have expected, and certainly not so common as in this country where, as already remarked, the same causes are neither so numerous nor so severe. The Chinese hardly know what acute inflammation means, and all admit that even phthisis is very chronic. I have also seen many cases of hæmoptysis that have not been speedily followed by its ordinary consequences. No doubt such patients may, and do eventually succumb, but it is very chronic. Bronchial catarrh is exceedingly common everywhere in China, and of course particularly in the northern half of the country, and especially during the long and severe winter. This affection becoming chronic, which is the normal condition, simulates phthisis, and this may explain, perhaps, the frequency of this affection noted at Hankow; although we are told special care was exercised in each case to guard against a wrong diagnosis. Speaking of the naval forces in Chinese waters during and after the first opium war, Dr Wilson says—“We had only one undoubted case of phthisis, and that in an officer whose case had clearly originated in England.” Bronchitis, he tells us, though not common, occurred more frequently, but was

seldom met with as an original disease having much power and apart from common catarrh; and when it has given rise to pulmonary abscess, without doubt being confounded with phthisis. One thing, he says, is certain, that idiopathic affections of the lung are not common at Hong-Kong, and tubercular phthisis originating here has hitherto been all but unknown, if ever witnessed, at least in the naval force. This exemption, he adds, is in conformity with what has been noted in other miasmatic districts—where there is the prevalence of ague, consumption is not rife.

Dr Reid lays considerable stress upon the proved connection between phthisis and abundance of soil-moisture and drainage, and quotes one authority to prove that the death rate of phthisis, in certain English towns, depends upon the efficiency of the drainage, and Mr Simon declares, that “dampness of soil is an important cause of phthisis to the population living on the soil.” On this ground, if on no other, Hankow, and many other places in China, ought to be hot-beds of the disease. If, then, as Dr Reid himself asks, the disease be rarely met with in China, will it show that certain elements now supposed to be powerful agents in rendering phthisis prevalent among a population, have been over-estimated as regards their evil influence on the body, or that some other conditions exist which modify or neutralise them?

A certain antagonism has been supposed by some French surgeons in Algeria and some American writers, to exist between ague and phthisis. Where the one prevails the other is either absent or very rare; and certainly the observations made in China would seem to bear out this doctrine, Ague is very prevalent in the centre of China along the course of the great river Yangtse, which is, Nile-like, subject to periodical risings and overflowings. It is also very common in the south, most probably the most frequently met with disease there. At Peking, the soil being sandy and absorbent, and there being little damp or marshy ground, ague in ordinary years is one of the rarest affections. The heat there is extreme for six weeks in summer, and the rain-

fall is copious at that time. The streets of the city and parts of the surrounding country are frequently for days and weeks under water. During the great inundations of 1870 and following years in Chihli, ague rose to the first place in point of numbers. In Shanghai, from April, 1860, to July, 1861, 28,000 cases were seen; ten were for pulmonary consumption (seven were well marked), and 1400 were for ague. Tubercle is common, but is confined entirely to the abdominal organs. My experience at the capital all points towards the same conclusion. In Formosa, one practitioner disputes this supposed antagonism, and notes forty-seven cases of phthisis in twelve months, and 718 cases of malarial disease. During the summer of 1872, he notes again 340 cases of intermittent fever, and 38 cases of chronic phthisis. At another part of the same island, during the same time, 20 cases of consumption were observed. It might, however, be a question, if malaria do not entirely neutralise it, does it not modify it? If so, this might account for the prevalence of the one, and comparative infrequency of the other. Or is this great immunity from consumption (for such we must all admit) where ague is rife, to be accounted for on other grounds, such, for example, as that of heat alone, predisposing, according to a well-known and fully-recognised division of diseases, into abdominal and thoracic, the former predominating in the southern and hot, and the latter in the northern and colder regions?

Time forbids my entering on a detailed statement of the other diseases generally met with in China. Suffice it to sum them all up very briefly. Leprosy, both tubercular and anæsthetic, is common in the centre and south of China, and it has been known from the most ancient times. A few cases have been observed of both forms in the north. Lazar houses exist—it is not considered contagious. It is looked upon as incurable, and is attributed to the exhalations arising from low damp ground.—Lymph scrotum and elephantiasis are also found abundantly in the south.—There is a good deal of anæsthesia in the north of China proper, not connected with leprosy. The people, and particularly the

Mongols, suffer greatly from rheumatism, caused to a large extent by the practice of sleeping on the ground in tents as the nomadic hordes do, and under the eaves of the houses or verandahs, or in the cold kang, as in China. The temporary loss of sensation in such cases is, doubtless, attributable to causes similar to those operating in the causation of neuralgia and rheumatism. Diaphoretics are found peculiarly useful. Dr Wilson remarks that malarious districts have seemed to dispose, if not excite, to attacks of rheumatism, but this he did not find to be the case at Hong-Kong; and, therefore, he asks if the neuralgic affections have not been set down as rheumatic? The former, he says, are not uncommon in malarious positions where the more open and injurious effects of the poison are very rarely manifested. I may here notice that cases of acute rheumatism have not been observed.—Whooping cough is not known as a distinct disease by the Chinese, although their medical works describe such a disease. It is classed with ordinary cough, and its infectious character is not dreamt of. It is not a prevalent affection.—Scarlet fever is also barely recognised. When it does exist it is usually classed with measles. The latter disease is invariably mild, and I never heard of a fatal case. It may be a question how far small-pox, which is universally prevalent and endemic, has modified or altogether done away with such infantile diseases, so common and fatal in this country. The Chinese sleep on cotton wadded mattresses, so that Dr Salisbury's theory of mildewed straw beds as causing measles does not obtain in China.—The absence of typhoid has been remarked as something very peculiar in view of the physical conditions everywhere existing, and of the habits of the people. Milk has been shown in this country to be a fruitful source of typhoid fever; but in China milk forms no part of the diet of the people, and here again we have one important factor less in the causation of disease. Scrofula is often seen in China, as evidenced in suppuration of glands, hip-joint disease, and also in spinal curvature, but not so frequently as in our large towns in this country. These affections are found most commonly among women,

who, owing to their small feet and the retirement to which custom condemns them, are deprived of exercise and exposure to fresh air, two things which are absolutely essential to health, and whose absence is the principal cause of the strumous constitution, and much of the phthisis at home with us. With regard to the small feet, it is remarkable that few direct evil consequences, such as necrosis of the bones, or ulceration, etc., result from this barbarous mode of binding these members; but the indirect results are very great, as witnessed in the strumous constitutions, the anæmia and its long train of dependent diseases, such as amenorrhœa and other uterine disorders. Such diseases, peculiar to the sex, are, I suppose, more prevalent throughout China than in any other country, and nowhere is the desire for children—sons at any rate—so great. Anæmia is the fruitful source of much of the disease in China, and has been by some considered the characteristic and important pathological feature of the Chinese constitution. This condition is caused, in addition to the reasons already advanced, by ague, deficient and improper food, dyspepsia, itself the effect as well as the cause sometimes of this condition, and by too long continued suckling of their children.—Boils and carbuncles are very common—one man is reported as having had as many as 200 during one season. Toothache is not very common—supposed, as already said, to be caused by worms—the population at large has very sound teeth, accounted for by their simple dietary. Shock is unknown. No patients, anywhere, bear operations with more fortitude, and owing to their lymphatic temperament, they are followed with less inflammation than usual in European practice. Time fails to quote case after case illustrating this point, and also the recuperative power of the Chinese system—recovering from the most fearful accidents, wounds, injuries, burns, operations, &c., with great ease and rapidity. Many cases that would be adjudged here as hopeless, or as incurable without surgical interference, get well there. Men, to all appearance mortally wounded, have recovered, making one almost doubt whether there really is such a thing as a wound necessarily fatal; men with the small intes-

tines basking in the sun for hours or days, and covered over with dirt; extraction of calculi filling up the whole bladder, and which, by all the rules of surgery, ought to have ended fatally; three musket balls extracted from one individual, two of them having passed through the left lung, etc. The way in which operations are borne is perfectly astonishing. Where chloroform has been administered it has attracted universal admiration, and the accounts circulated of this wonderful medicine have not been less wonderful—the extraordinary “sleeping medicine,” by which a person could be rendered dead and afterwards brought to life. This has, indeed, excited their surprise and attention, and it is declared twelve parts wonderful—ten being the natural number. The Chinese require a large amount to render them unconscious, and their insensibility occurs without almost any preliminary excitement. Without chloroform they neither cry nor wince, and this is not to be accounted for, as is often done, so much by a less acute nervous system, but rather to moral training. Their religious systems teach indifference to bodily suffering or to life itself. I have hardly ever met a case in man or woman where objection was offered to taking medicine, or submitting to an operation, provided the latter did not necessitate parting with a member. The idea of the sacredness of the body and the necessity of keeping it entire—dismemberment being considered a sin against one’s parents from whom the body was received—of course militate against amputations, and render dissection at present impossible. We have just said that operations are followed with less inflammation than usual in European practice. The Chinese constitutions are essentially anti-phlogistic. Primary affections of internal organs are seldom encountered, and so strikingly is this the case all over the empire, that the order of *phlegmasie* of Cullen, forming in other places so large a portion of human maladies, might almost be struck out of the nosological catalogue without even an exception in favour of hepatitis, generally considered the peculiar and overwhelming morbid product of the East. All inflammatory diseases, as remarked by Dr Wilson in 1858, in China and India, assume

a far more passive than active form, and require less depletion than similar diseases in temperate climates. "The most sanguine physician," remarks another, "would never dream of bleeding a Chinese." Their diseases are chronic and adynamic. The Mohammedans and Mongols, who live largely upon mutton and meat, generally present more of the inflammatory type, and much more resemble Europeans in their diseases.—Skin diseases, especially scabies, psoriasis, lepra, eczema and pityriasis, are excessively common.—Nervous diseases are remarkably infrequent, and supposed to be owing to the apathetic, peace and quietness-loving character of the people. The Chinese speak of the heart, seldom of the head, of which they know almost nothing.—Apoplexy among the aged officials, properly predisposed to it by their obesity, and the necessity of performing the nine prostrations before the Emperor so frequently, is not very uncommon, and of course there is paralysis, chiefly in the form of hemiplegia. Paraplegia, general paralysis, softening of the brain and chorea, are quite uncommon. Epilepsy is met with, and a few cases of idiocy and imbecility have been seen. There are no lunatic asylums, and the presence of much insanity is highly improbable, considering the high estimate entertained of foreign medicine, which would draw to our hospitals such cases if they existed, and from a review of their whole condition, we should certainly not expect to find it prevalent.—Cancrum oris or stomatitis is common, of course in young, unhealthy, anæmic, pot-bellied, scrofulous-looking children.—Goitre is very frequent in the north among both sexes. It is found also on the plains and in our large cities, and frequently in the absence of the supposed ordinary producing causes. They have for centuries been aware of the power exercised by seaweed over tumours of this and other classes.—Abscesses, ulcers, simple tumours, necrosis of bones, especially of the left lower jaw, are exceedingly common, in fact constitute a large proportion of our practice.—Diseases of the eye are, of course, very common, the chief being conjunctivitis, leucoma, entropium, pterygium, corneal ulcers, and trichiasis.—Throat affections are

common—their universal plan of counter irritation outside, by pinching the skin of the throat, is curious.—Hernia is more common in China among men than probably in any other country. The native faculty and people are ignorant of its condition or cause, and suppose it to be a collection of air, and so frequently puncture it.—Fistula *in ano* and hæmorrhoids, the former called the dripping or leaking ulcer, are terribly common.—Constipation is very common.—In summer, diarrhœa and dysentery are very frequent, caused chiefly by eating the early unripe fruits and vegetables, and in too great a quantity, and probably also by exposure at night and sudden and severe vicissitudes of temperature. There is much less prostration under attacks of dysentery amongst the natives than among Europeans. Chinese diarrhœa and dysentery, if not among opium smokers, are generally very mild and very amenable to simple treatment, and, as already stated, congestion and inflammation of the liver, so fatal to foreigners, are very rarely, if ever, met with among them. Liver diseases are generally considered to be the effect of climate, but China rather disproves this. I think they are more likely owing to errors of diet. Some of our brethren have drawn attention to a close connection between typhoid and certain forms of malarious fevers. A question which does not yet seem settled is, can typhoid originate *de novo* from the decomposition of faecal accumulations and the like; or, in other words, is it of spontaneous development? There is some evidence collected in China which seems to point to the latter.—Harelip is not very common, and where it does exist, there is no desire to have it remedied. They think it cannot be cured, and are generally afraid to meddle with what is natural, and has been received from one's parents. They are wonderfully free, as a people, from deformities, monstrosities, and such like. The Chinese never intermarry with one of their own name, and this may account for the absence of any diseases supposed to be depending upon or derivable from consanguinity. And what is the salvation of any country is early marriage, which

is universal in China, from the desire to have sons to hand down their names and worship at their tombs. The children are suckled at the breast for about three years. It is astonishing what a greatly increased amount of the milk secretion is obtained in China, even by European mothers, by the consumption of a regular daily quantity of well-made rice or millet gruel. The introduction of rice was opposed in Ireland, because of its supposed property of preventing fertility. China is opposed to the potato on the same grounds. Infant mortality here is said to be very high, and improper food to be the cause *par excellence*. The Chinese substitute for breast milk is a pap made of rice, flour and sugar, with which the child's gums are smeared. There is no registration in China, and there are no means of arriving at an estimate of the mortality of either infants or adults in Chinese cities, except by numbering them as they pass out of the city gates. In every house there is supposed to be a list of the inmates hung up, subject to the inspection of the police. Whatever the rate of infant mortality may be, we do not think it is so high as in Europe. Many of the same causes affecting the adult must also have their favourable effect on their offspring. One thing is certain, infanticide does not prevail to the extent so generally believed among us; and in the North, whence Europe derived her ideas chiefly from the Jesuits of last century, it does not exist at all. Disinfection, separation or isolation in cases of disease, are but little practised. When had recourse to, fire is the usual instrument. Poverty too often prevents this expensive process from being carried out, and the worst results are to be feared from the purchase of second-hand clothes. Infection is, no doubt, thus frequently propagated, through the pawn-shops especially, which everywhere exist, and are extensively patronised by the poorer classes, and are the hot-beds of infection. On the accession of cold weather, when the winter garments are withdrawn from these establishments, we invariably have an outburst of small-pox which lasts over the winter, proving very fatal—sadly pitting or blinding those who recover. It might prove

interesting to classify and tabulate the diseases of China according to the order of frequency, as seen at the ports, in the Mission hospitals for the Chinese, and among Europeans, as seen in private practice. The hospital and customs' half-yearly reports would furnish the data, but space forbids. The following very brief statement may suffice :—

At *Peking*, in the extreme north, in 1865 and 1866, for example, out of 3157 and 8066 patients respectively, the leading affections were—asthma and chronic bronchitis, 252 and 885; dyspepsia, 349 and 634; rheumatism, 140 and 209; ulcers, 144 and 378; scabies, 152 and 1074; conjunctivitis, 236 and 342; diarrhoea, 45 and 54; dysentery, 20 and 138; neuralgia, 51 and 224; phthisis and tabes mesenterica, 36 and 171; struma, 50 and 132; affections of the ear, 98 and 122; abscesses, 95 and 190; ague, 4 and 31 respectively.

At *Chefoo*, in the north, on the sea, probably our best sanitarium in China, the order runs—dyspepsia, eye disease, skin disease, and winter cough.

At *Hankow*, in the centre, Dr Reid reports in one year, out of 5213 patients—chronic rheumatism, 288; ague, 118; phthisis, 118; bronchitis, 250; dyspepsia, 246; diarrhoea, 80; conjunctivitis, 132; eczema, 113; ulcers, 138; scabies, 334. In another report, he states the order to be, and all of the most chronic kind—rheumatism, dyspepsia, malarial disorders, bronchitis, phthisis, conjunctivitis, ulcers, dysentery and scabies.

Dr Porter Smith, of the same place, in 1864-65, out of 18,764 patients, catarrh and bronchitis were represented by 2876 cases; rheumatism, 2506; skin diseases, 2624; ulcers, 2100; eye diseases, 3769, of which 1433 were for conjunctivitis alone.

At *Foochow*, in the south, in the summer of 1871, out of a foreign population of 1774 there were seen 309 cases, and the order was the following—dyspepsia, 64; diarrhoea, 43; gonorrhoea, 28; ague, 22; dysentery, 17; primary syphilis, 16.

At *Swatow*, further south, the figures stood—ague, 101;

ulcers, 89 ; secondary syphilis, 87 ; dyspepsia, 80 ; ophthalmia and chronic bronchitis, each 64 ; rheumatism, 57 ; anæmia, 44.

At *Canton*, in the extreme south, the leading affections were—ague, 46 ; diarrhoea, 39 ; rheumatism, 13 ; boils, 14.

In *Formosa*, also in the south, the cases stood for the summer six months of 1872—197 cases of quotidian ague ; 94 of tertian ; 49 of quartan ; 118 of remittent fever ; 82 of chronic rheumatism ; 148 of enlarged spleen ; 68 of dyspepsia ; 67 of chronic ulcers ; 96 of chronic conjunctivitis ; of diarrhoea, 25 ; anæmia, 44 ; chronic bronchitis, 39 ; phthisis, 38 ; worms, 30.

This must suffice to give a general idea of the prevailing diseases in the three regions of China, and, with the exception of Hankow and Peking, all bordering on the coast.

Remittent and intermittent fevers, as our remarks may have already indicated, are extremely common in the south, and form by far the largest proportion of the diseases peculiar to these regions. Among our forces in China, in 1842, periodic fever with chronic fluxes, partly dysenteric and partly diarrhoeaic, were the great endemic affections which attacked them. These fluxes often succeeded attacks of fever, were frequently reciprocal with, and appeared to be vicarious of, them. Rice is largely cultivated in the warm, moist south, and it is to this marshy, swampy land, we owe the presence of so much fever. Dr Wilson has thrown out the supposition in the form of a query, that the exhalations from paddy fields under regular management, and yielding healthy products of vegetable growth, may give rise to intermittent, while the stronger poison exhaled from marsh land, through processes of rapid and multiplied destruction of vegetable matter, may occasion the more concentrated and fatal remittent fever. He thinks if the surface could be deprived of its malarious emanations, and the diseases now inoperative were to remain so, Hong-Kong (and this would hold true of China generally) would be one of the most salubrious spots in the world. Much has been done in this direction since these remarks were

written, when Hong-Kong became a colony of ours. The above writer dwells somewhat largely on this subject, and from its own interest and its close connection with the scope of this paper, I make no apology for giving a summary of the views enunciated. In his *Medical Notes on China* he states that that country ought to be one of the most salubrious, as it is naturally one of the most favoured, portions of the earth's surface. What is detrimental is believed to be chiefly the wilful work of man's hands, or of his neglect and perverse ignorance. Certainly some diseases, such as ague, fluxes, ulcers and skin affections, might be reduced in frequency and force if the people abandoned some of their agricultural and economic usages. He mentions the substitution of wheat for rice cultivation as the first simple and most powerful instrument. Wherever land can be got to bear rice it is eagerly employed for that purpose. This would do away with marsh land, and by virtue of the absorbent nature of the soil, for our expensive and laborious drainage he sees scarcely any call in China. As they have long ago adopted one American article (tobacco), and universally use it, he advises the use of the potato, a native of the same country, which at present is excluded from Chinese diet. Next in order of importance are the measures required to correct the more limited morbid influence created and diligently fostered by man, and not the product of the soil and climate. He would recommend entire change of plan of the towns and structure of the houses; would widen streets, make sewers and gutters, and render compulsory the speedy removal of dirty and rapidly-decomposing matters from narrow, crowded lanes. He adds that it may well excite surprise that such positions do not prove much more unhealthy than they are, and become every year absolutely pestilential. And this becomes more surprising when viewed in connection with the domestic and personal habits of the people, and here entire change is required to secure great increase of health and enjoyment. The one word "cleanliness" expresses the want. Itch, which is so universal, and cutaneous diseases generally would thus be got rid of. The want of this virtue must be otherwise injurious to health. If we bear in

mind the utter absence of all sanitary science, which we have attempted briefly to pourtray, the narrow streets, pent-up houses, dense population, want of ventilation, earthen floors, absence of cellars, sewers and other channels for under-ground purification, stagnant pools and pits of putrefaction in all directions, with a high atmospheric heat for half the year, it is astonishing that the country is not swept incessantly by fearful epidemics, and ere long depopulated. And we should expect the people to be still more unhealthy, and the ravages of disease very much greater, if we consider their food, malaria, extensive use of opium and tobacco, and some would add weak tea, their want of personal cleanliness, no body linen, almost no washable clothes, and the use of the same garments day and night, and when unfit for outside wear, receiving another layer, each layer gradually moving inwards a stage, until thrown off, etc.

Now, if all this be true—and no one who knows China will fail to admit the truth of the description—we may well ask, is their general freedom from disease, and especially acute disease, and the general health, vitality and activity they exhibit not altogether very remarkable? If western sanitary science could relieve them almost entirely of the affections already indicated as prevailing, without planting the diseases of modern European life, we should have a country the most populous, the purest from disease in the world; and at the same time it is but reasonable to expect that many of their uncontrollable epidemic or endemic diseases would be greatly lessened and moderated. Small-pox would disappear before vaccination, and the world might then have some hope of stamping out this loathsome disease.

Dr Wilson explains the absence of many diseases which are elsewhere frequent and occasion much mortality, but which in China are comparatively uncommon and unimportant, by saying that perhaps the endemic diseases, periodic fever, flux and small-pox, being the chief destructive agents, absorb and occupy the place of other morbid powers, and that their influence is such as not to tolerate the rival action, or even to any extent the inferior operation of the more ordinary causes

of disease. Like Aaron's rod among the wands of the magicians, they swallow up antagonists which, though feeble in their presence, are formidable elsewhere.

Concluding Remarks.—I have thus attempted, as briefly as possible, to give a notion of the causes and conditions of diseases in China, and the extent to which they prevail. I think it is impossible to overrate the influence of climate, food, customs and habits on health as well as on disease. The peculiarities of the Chinese in these respects have been acting in unbroken order through long series of years. The endemic diseases, as suggested above, may too, to some extent, have had their influence in checking or neutralising the morbid germs of other diseases, or at least giving the people a certain amount of protection. We know the natives are less susceptible to malarious and other malign influences than Europeans, but this cause does not, I think, explain all the phenomena. There are many useful lessons to be learned from a study of Chinese character and habits as affecting health. The one word *sobriety* might sum up the most obvious of the causes of the favourable conditions as to health and duration of life which obtain in China. Napoleon said intemperance was incompatible with greatness. A review of the conditions of disease in China leads us to believe that insobriety, in its widest acceptation, is incompatible with health and freedom from disease. Sobriety is defined by one to be—that we should neither eat nor drink more than is necessary for our constitution, in order to perform the functions of the mind with ease. The true rule of diet to every man, according to another writer, is his natural undepraved appetite. Excess is an enemy to nature—moderation in every affection and enjoyment is the way to preserve health. The Chinese partake sparingly of flesh, in many cases from sheer poverty, in other cases from religious motives, and in others again to prevent “fires” (inflammations), as they express it, from originating in the system and setting up diseased action. Buddhism, with its doctrine of the transmigration of souls, has rendered an important aid to health by inducing among its priests total abstinence from animal food, and general temperance in this respect among

the people as a whole. In certain diseases in our own country our physicians prescribe low diet and absence of animal food, and with reason and advantage. A trial of a similar regime in health might be equally profitable for both soul and body. If temperance—that is, sufficient for wants but not for luxuries—in eating and drinking were more strictly observed, we might hear less frequently of high fevers, acute diseases and general inflammations. It is here, perhaps, where Europe might with great advantage assimilate herself more to Asia, and by so doing acquire much that would prove useful in enabling her people to resist morbid influences. And as Cornaro expresses it, there would then be the absence of all those “distempered humours which bring on defluxions.” He enjoins a sober regular life as the only happy one in its consequences; and he exhorts and beseeches all men of sense and resolution to possess themselves of this source of health, more valuable than all the riches of the universe. We never realise what a state might be if its citizens were temperate in all things. Taking just enough to live upon is the rigid natural law. By obeying this law as nearly as possible we should be comparatively free from the external cause of the induced diseases, and better, or at least well, protected against the consequences of those diseases springing from uncontrollable causes. As already stated, although the most sober of peoples, the Chinese drink no inconsiderable quantity of spirits, but excess is almost unknown. They form no exception, therefore, to the rule that all nations have practically repudiated the doctrine of water being the simple salutary beverage designed by nature. From a pretty large and extended experience in China, I can, however, confidently assert that the *aqueous* regime has guaranteed the best health and longest term of residence there among Europeans, and the more slowly we deviate, if at all, from this course the better. Tea will be found the most wholesome beverage, promoting health and happiness by doing away with noxious and intoxicating potions. So far its introduction has been accompanied with the most salutary consequences, and it is believed that its extensive consumption will most effectually counteract drunken-

ness and promote health. The author of the *Ride to Khiva* correctly puts it when he says, "This beverage (tea) becomes an absolute necessity when riding across the Steppes in mid-winter, and is far superior in heat-giving properties to any wines and spirits. In fact, a traveller would succumb to the cold in the latter, when the former will save his life." Tea has been the national beverage of a third of the population of the globe for the last 1500 years. The use of boiling and boiled water, either alone or with a little tea in it, is characteristic of the people, and has been productive of much good and of the prevention of much disease. The astringency of the tea, like the use of betel nut in India, has been a corrective against dysentery and diarrhoea, and the boiling of the water has obviated typhoid fever, diarrhoea, calculus, and other diseases.

We cannot lay too much stress on regularity in everything—hours of sleeping, eating, working and exercise. With the Chinese there is the perfect appropriation of the sunlight in preference to artificial illumination. They rest, work and sleep in periods that precisely accord with the periodicity of nature. They retire early to rest, opium smokers excepted. The streets of Chinese towns are deserted shortly after sunset. They rise early; the Emperor and his court at or shortly after midnight. The business of the empire for the day is all transacted long before we should think of getting up. Some of their fairs are held before, or just at, sunrise. The value of regular hours and of rest is little thought of here, and too little inculcated. The almost invariable answer given by aged persons as to the cause of their longevity is early hours and regular habits; and some one, merely looking at the subject in its commercial aspect, has made a calculation of the saving in gas and candles which such a course would bring about, and it is simply astounding. The Chinese are always struck with our activity in everything—we cannot even walk slowly; and although we have enough of time and money, it may be, we must still be going a-head, rushing and bustling, little thinking that "nourishing our heart," as they call it, is any concern of ours. Above all things, the Chinese enjoin peace of mind and quietness of body—avoidance of

anger, fear, grief, anxiety, and the violent exercise of the passions generally, to which are ascribed more than half their disease. The Westerns seem a riddle to them—they fail to understand us. We have carried industry and competition to an extreme. Our social exigencies override our philosophies. Competition in business, speculation, religious controversies, party politics, etc., undermine our health and increase our mortality returns. The Chinese do everything quietly and methodically, without the slightest exertion or fuss. They seldom do anything for themselves which can be done by another. They have few ups and downs in their world. Fate regulates everything, and so they are content with their lot. If they have wealth they use it; if none, they do without it. They live on in one unbroken routine. Worry is unknown. General indolence and ease, disinclination to be troubled about matters, a desire to let things take their course, trusting that all will come right, are their characteristics. This state of feeling, partly inculcated by their various religious systems and occasioned partly by the climate, and in accordance with their unstimulating food and abstemious habits, conduce most effectively to the permanence of their institutions and indispose them for any change in their customs. I must forbear enlarging further on this subject, as this paper has already exceeded the limits assigned to it. We trust some of the views advanced may have the effect of directing the profession to a consideration of our habits of life and civilization generally as bearing upon the question of health, and the causation, conditions and prevalence of disease.

IV.—OXIDE OF ZINC IN INFANTILE DIARRHŒA.

By J. CRAWFORD RENTON, M.B., F.F.P.S.G., Assistant-Surgeon, Eye Infirmary, Glasgow.

WHEN we consider the rapid development which is going on in the organs of the young child, it does not surprise us to find that Diarrhœa, in one form or another, is one of the chief ailments to which young lives are liable.

A variety of forms have been tabulated, but when actual

cases present themselves it is not always easy, nor is it necessary, to place each under the special division or subdivision which some authors consider essential to an intelligent practice of our profession. For convenience and perspicuity in writing it is, however, best to adopt some classification, such as, the Simple and Non-Inflammatory, which includes the Nervous, and the Inflammatory.

The class of cases to which we wish specially to refer is more directly Nervous, but like those which neither cure themselves nor are cured by medicinal or dietetic interference, it is liable to become inflammatory, thus merging into the second class.

When the nerves governing the gland secretions have been irritated, and have lost their natural power; when a sudden fright or other remote cause has produced a derangement of the nervous system; when the stomach and intestines have had their tonicity augmented, or, in other words, when they contract too soon on the undigested food; we have as a result what has been called by some *lienteric diarrhoea*, that is to say, that along with copious fluid evacuations pieces of undigested food are passed.

Morgagni describes his own condition after a single twelve hours of severe diarrhoea in these words:—"On the day following the attack, I realized my danger when I looked at my body, but particularly when I saw my face and hands as flaccid as if I had emerged from a severe long illness." If the effect of such an attack was so severe on him, how much more rapid and severe will it be on the young infant; and such is the case, for in a very few hours the well-rounded, fine-looking child is converted into a limp, withered little creature. One woman expressed the condition of her child rather forcibly to us, saying "my bairn has gone away a' thegither, and that before my very eyes."

So spasmodic are the evacuations in some cases, that we might almost say we had an intestinal chorea.

We come, therefore, to consider what is the most suitable remedy to employ in such cases. While acting as assistant in the Royal Hospital for Sick Children in Edinburgh, con-

siderable opportunities were afforded for testing the value of different drugs.

Among those tried were:—Bismuth and Oxalate of Cerium, both of which we found useful, the latter especially where vomiting was a prominent symptom; Dover's Powder in combination with a little Grey Powder in some cases acted like a charm, but in the severe forms of the class under consideration was of little use; Kino Powder, Mineral Acids, stimulants in the shape of Spirit of Camphor, Brandy, Ammonia, &c., were all of service; sedatives, as Chloral and Bromide of Potassium, which produced a soothed condition of the nervous system, thus giving rest, which is one of our most valuable curative agents. We found also that by careful dietetic treatment, consisting principally, in young children, of small quantities of milk and lime water often repeated, considerable improvement took place.

Anxious, however, to obtain some drug upon which we could rely even more than on those mentioned, Oxide of Zinc had been recommended by Dr Brakenridge, Physician to the Hospital, and Assistant-Physician to the Royal Infirmary in Edinburgh. Oxide of Zinc is described as tonic, sedative and astringent, and when it was considered that it had enjoyed a high reputation in nervous complaints, such as spasmodic asthma, chorea, certain forms of convulsions, and had been employed with success in chronic dysentery, as also in chronic bronchitis, we were hopeful that in Infantile Nervous Diarrhoea, or, as we are more inclined to call it, Intestinal Chorea, it might prove serviceable, and, accordingly, it received a trial in a large number of cases, the result of which was published at the time by Dr Brakenridge.

The plan adopted at first was to give to a child of six months two grains of the powder every six hours, and generally after the third dose a distinct improvement was observed. As it was inconvenient in the form of powders, more especially for hospital patients, it was made up as a mixture with mucilage and water. The question, however, immediately arose, Might the good effects not be ascribed in many cases to the mucilage and water? To obviate any

fallacy such as this a certain number of cases were treated by water, and also some by mucilage alone ; the result being that drachm doses of water every six hours were followed by amendment in the mildest cases, while mucilage produced a good effect where the symptoms were by no means mild. Where, however, the purging was severe we were compelled to fall back on the oxide of zinc, which checked it at once.

During two weeks it suddenly failed, and we feared that, like some other medicines which seem to do well for a time, it had ceased to be so satisfactory, but on enquiry it was found that sugar instead of mucilage had been used in making the mixture, which at once accounted for the temporary failure.

Cases which had gone the length of the dysenteric type yielded to this treatment, and as case after case was benefited by it we saw that in oxide of zinc we had a most valuable agent for the treatment of this form of infantile diarrhoea. Several cases are fresh before us where the child was *in extremis*, and only death was looked for, and carefully administered doses of the zinc, with proper dietetic treatment, which must of necessity accompany all medicinal medication, were followed by the best result.

It is by no means easy to have a clear conception as to what any medicine does, and by its effects we can only judge. Oxide of zinc is called a tonic to the nervous system, we know that tonics are those drugs which improve the condition of the economy ; whether zinc supplies a molecular defect, or acts on the blood supplying the nerves in the neighbourhood of the part effected, or is more central in its influence, we are not in a position definitely to say. According to some its action is purely mechanical. It seems, however, in the instance before us, to act by steadying the nervous system, curbing it as it were, and restoring it to a state of quiescence. While we recommend the above treatment, we hold strongly at the same time the great importance of combining rest and improved diet, along with suitable drugs, if we wish successfully to combat this disease.

V.—NOTES OF CASES OF NERVOUS DISEASE.

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I.

HEMICHOREA COMPLICATED WITH HEMIPLEGIA.

THIS combination is of very special interest as bearing on the cerebral theory of the pathology of chorea, and the following cases are noted as a contribution to this subject:—

CASE I.—*Attack of hemichorea (mistaken at first for hemiplegia) in Jan., 1875. Rheumatic history in family. Complete recovery. A second attack of hemichorea and hemiplegia on same side in Dec., 1875. Complete recovery after four months' duration.*

Eliz. M., æt. 11, was admitted to the Western Infirmary on Jan. 6, 1875. Her father was then in the wards, suffering from cardiac dropsy, which proved fatal. He had been affected with rheumatism, and so had his sister, but no other points in the family history seemed to bear on this case. The girl had never suffered from rheumatism, but she had had scarlet fever four years before admission, followed by dropsy which lasted a fortnight, from which, however, she had made a good recovery. For some two years she had suffered from frontal headache, and occasionally from giddiness and pain in the eyes, and at times she had a little sickness in the mornings. The weakness was noticed in the right arm about seven weeks before admission; she was noticed to use the left arm by preference, and occasionally her right hand was seen to tremble in lifting a cup or glass. There was also some little weakness in the right leg, as shown in walking. The case, indeed, was sent into the Infirmary as one of right-sided paralysis. It became, however, very clear to every one, soon after admission, that the right limbs were affected with twitchings, and the diagnosis of hemichorea could be made with perfect certainty. It seemed, however, equally certain that the twitchings had become much more distinct by the time she came under my

notice than they had been before. Under treatment by iron and arsenic, and cold douche to the spine, she recovered quite satisfactorily, and left the hospital without any remaining weakness in a few weeks.

She was readmitted on Dec. 11 of the same year. A return of the symptoms had been noticed for a month; the choreic movements and the loss of power affected the right side as before; the patient, however, thought the loss of power was less marked in this attack than in the former one. My own opinion was, that while this attack was essentially similar to the former one, the twitchings—which were again quite limited to the right side—were more pronounced than formerly, and the loss of power at least relatively less. The child was still very anæmic, with a marked hum over the veins of the neck, but without any cardiac bruit, and without albuminuria; she still suffered at times from headache, which was occasionally severe. Dr Reid detected nothing on ophthalmoscopic examination of the optic discs beyond congenital cupping.

Treatment by iron and arsenic failed to improve the patient, although the dose of arsenic reached was considerable ($7\frac{1}{2}$ minims of the solution thrice a day). Indeed, the twitchings became very distinctly worse: Belladonna was begun on Jan. 14th, and the dose carried up by degrees to 3 grains of the powdered leaf thrice a day; the physiological effects were produced—dryness in the throat and dilatation of the pupils—but no improvement occurred in the twitchings. The effect of confinement to bed was also tried for a time, although the patient was not so ill as to appear to demand this on general grounds, but this also failed to produce any good effect.

On February 16th, the Belladonna treatment was stopped, and a simple steel mixture ordered, as also a little wine. About the middle of March a gradual improvement set in, and at the beginning of April she became rapidly better. This change seemed more related to a moderation in the severity of the weather, which occurred about the same time, than to anything else. The arm had recovered so

well that she could be trusted with carrying dishes, &c., through the ward, and no defect was observable in her walk. She was dismissed on April 6th, 1876, to the country for three weeks, and when she returned she was greatly improved in every respect, and no twitching could be detected. She was seen last in June, 1877, when it was found that she had gained flesh, and had not again been affected with the chorea or any other illness.

Remarks.—The prolonged character of the second attack, the limitation of the choreic movements to the one side, the presence of a distinct degree of paralysis in the same side, and the complete failure of remedies, would certainly have led, at one part of the case, to an unfavourable prognosis, and would have suggested some very serious lesion of the brain, if the complete recovery from a similar attack previously had not been so perfectly known. The occurrence of the paralysis in a striking form *before* the twitchings were sufficiently marked as to attract much attention, was a striking feature in the first attack, not very often seen in such cases.—(See Trousseau; Sydenham Society's Translation, vol. 1, p. 401-402.)

CASE II.—*Loss of power in right arm and leg. Detection of slight twitchings on same side. Rheumatic history in family. Rapid recovery.*

Donald H.—, nearly 13 years of age, was admitted to the Western Infirmary on April 7th, 1876. He had been sent to work in a painter's shop in February, and had left it in March, owing to some dispute. Shortly afterwards it was noticed that his right arm was affected, so that it shook very readily, [and that he let things fall; it seemed also to be weaker than the other. The right leg also became affected, so that, he said, it was always tripping against the other. He was seen by a surgeon, who regarded the case as one of paralysis, and the boy came into the Infirmary with a story of its being lead paralysis, owing evidently to some confusion of ideas somewhere, as there was no point in the case which suggested the notion of lead poisoning, and certainly not of lead paralysis. On admission, the existence of a dis-

tinct degree of right-sided paralysis was made out; even the face was at times supposed to be affected: the muscles responded perfectly to Faradic electricity. In observing him closely, it was noticed that he jerked his body, and more especially his right side, particularly when attention was directed to him, as in examining him; and when desired to keep in special positions, it was noticed that he had long drawn sighs, after the manner common in choreic patients. He preferred to keep his right hand in his pocket, or in his other hand. His mother stated that she had noticed twitchings of the right cheek. No affection of the heart could be detected. There was a venous hum in the neck. The urine was not albuminous. The boy had had scarlet fever when four years old, and this had been followed by dropsy. He had never had rheumatism. His mother, however, had had rheumatism in a pronounced form, and her brother had also had rheumatic fever. No other points in the family history appeared to bear on this case.

The treatment adopted was by iron and arsenic, and a distinct improvement was recorded on April 24th, when it was found that he was able to use his right hand in supping several spoonfuls of milk without spilling any: formerly he required to use his left on account of the spilling which took place. He was dismissed on May 10th, when he was able to hold out his hands quite steadily, and no loss of power could be detected. When seen again, in a fortnight later, the improvement was maintained.

Remarks.—The paralysis in this case was the most marked feature. The twitchings, indeed, were so slight as almost to elude notice; but they appeared to me perfectly distinctive of a slight form of chorea, so that I ventured on a much more favourable prognosis than would have been justifiable in any other view of the hemiplegic paralysis. The rapidity of the recovery even exceeded the expectation based on this favourable diagnosis.

CASE III.—*Gradual loss of power and slight unsteadiness in left arm and leg, with development of twitchings in left cheek. Aggravation of these symptoms after an attack of scarlet fever,*

especially of twitchings in cheek. Persistence of weakness in left limbs for two years. Recovery as to limbs, but persistence of twitchings in cheek at intervals.

Eliza R., æt. 13½, applied as an out-patient for advice at the Royal Infirmary in December, 1873, and subsequently at the Western Infirmary. She was seen at both institutions by Dr Gairdner, but she came more frequently and specially under my own notice. In July, 1873, it was first noticed that the left arm and hand were not used so frequently as usual, and shortly afterwards an impairment in the left leg also was noticed. In November of the same year she had an attack of scarlet fever, and, three days before this began, she had twitchings of the left cheek, lasting for two or three seconds. The attack of scarlet fever was not severe, but momentary jerkings of the muscles of the cheek have been noticed frequently since her recovery. No pain, sickness, vomiting, or unconsciousness have been associated with this affection. When seen in December, 1873, there was a slight, but perfectly distinct, paralysis of left arm and leg, and a less distinct affection of the left cheek. Eyesight, hearing, and ocular movements were perfect. The arm was held out somewhat unsteadily, but it had none of the typical choreic jerking movements. Its use had become so far impaired, that lessons on the pianoforte at school, which had been begun, had to be given up. The affection of the leg was very evident, especially at certain times, in walking. There was no rheumatic history, and no affection of the heart could be detected. The general health was good. Menstruation had not begun. In March and April, 1874, the twitchings in the left side of the face and mouth were reported as more frequent (although, unfortunately, I never saw an attack)—they came nearly every day, and by and bye as often as twice a day. She had a sensation in the face which warned her of the attack coming on. In December, 1874, the arm and leg seemed to be rather worse, more distinctly paralyzed, but never to an extreme degree. Menstruation had appeared once or twice, but no improvement in the symptoms had resulted. The treatment adopted in this case was at first

by arsenic and iron; thereafter Dr Gairdner recommended the use of electricity. Faradization of the muscles of the arm was first tried, then the continuous galvanic current was applied from the spine to arm, and afterwards weak currents were applied to the head, but no indication of improvement could be seen after a fair trial of this remedy. Bromide and iodide of potassium were also tried, the one after the other, with an equal want of success. Gradually, however, and after treatment had been discontinued, an improvement set in about the spring time of 1875, the first indication of which was as regards the leg, and afterwards the arm and hand regained their power and freedom of movement. The twitchings in the cheek likewise became less frequent, so that several weeks occasionally elapsed without any recurrence of them. When seen in June, 1877, there was absolutely no defect visible in walking, and the hand seemed also perfectly natural; whereas formerly it was shaky and apt to drop things, it could now be used freely for any purpose, even the most delicate. The twitchings, however, cannot be said to have disappeared from the face; they come occasionally even two or three times a-day, but, as a rule, there is a long interval between their recurrence. There has never been any loss of consciousness, or any general convulsion. Menstruation has been regularly established for about two years past, and the patient has grown considerably. Her health is excellent.

Remarks.—When this case was first seen the view taken was that probably the affection was allied to chorea (although it was far from being a typical case); but some suspicion was likewise entertained of there being a serious lesion of the brain (a tumour, or such like). With the persistence of the twitchings and paralysis, and the total failure of remedies, this latter view began to gain greater probability, so that in December, 1874, it is noted that Dr Gairdner thought that some lesion of the brain must now be presumed to exist, although its nature and seat were uncertain. But the favourable issue of the case—which is here recorded in view of supplying hope under similar conditions—

seems to render it probable that the original view of the case was pretty near the truth; the concurrence of the gradual improvement with the perfect establishment of the menstruation is, perhaps, also in favour of this view, and is in any case a point of much importance. The twitchings of the cheek, as judged by the descriptions given by the patient and her mother, were not unlike the effects of those "discharging lesions" in the brain, so well described by Dr Hughlings Jackson, constituting those local forms of epilepsy to which Charcot has applied the term "Jacksonian."

[Belonging apparently to a different class of cases was the following, which is here merely referred to as having an indirect bearing on the subject:—A girl nine years of age had been affected with left-sided paralysis for a couple of years, followed by considerable rigidity and contraction of the muscles and tendons, and in her case a certain amount of spasmodic movement became developed, especially noticeable in certain positions of the limb. This child was shown at a meeting of the Glasgow Pathological and Clinical Society, as presenting certain points of resemblance to a case of "Athetosis" shown by Dr Gairdner on the same occasion (See *British Medical Journal*, June 2nd, 1877, p. 684), and it has since been described shortly in Dr Gairdner's papers on "Athetosis," in the *Lancet* (June 16, 1877). In this case the choreic movements became developed after the existence for some time of hemiplegia, with rigidity, so that, as already remarked, the case differs from the group here recorded.]

The cases here recorded seem to afford considerable support to the cerebral theory of chorea. The occurrence of hemi-chorea itself is a striking argument in favour of the cerebral origin of this complaint; but when, as in the first case particularly, this is not only associated with, but preceded by a distinctly unilateral paralysis, it is not easy to avoid localising the lesion in the brain. Moreover, we know that gross cerebral lesions may give rise to symptoms closely simulating chorea or hemi-chorea. I have elsewhere recorded one such case where the diagnosis of chorea was

only departed from when we found the illness quite intractable, and when, before death, the gradual paralysis of various cranial nerves, and the occurrence of some other symptoms, seemed to point pretty clearly to a tumour of the brain, which, indeed, was found (*British Medical Journal*, 1870, vol. 1., p. 454). In the case of Elizabeth M., in the present paper, we found a state of matters, during her second attack, which seemed very suggestive of some such mischief; yet her case was clearly one of chorea, for, not only did she recover, but the fact of two similar illnesses in successive winters adds great weight to the case as showing that these illnesses, so clearly of cerebral origin, behaved in this respect like the ordinary forms of chorea with which we are all so familiar.

The third case remains, perhaps, in some doubt as to its exact nature. The hemiplegic paralysis, the existence of localised "epileptic" convulsions of the facial muscles, and the slight unsteadiness of the arm, can all, however, be much more readily understood if we suppose, with Dr Hughlings Jackson, that an altered condition of the cerebral convolutions may give rise to "discharging" effects in the muscles, whether of a choreic or of an epileptic character, and that lesions of the same parts may lead to paralysis, occasionally transient, but sometimes more persistent. It is worthy of remark that the paralysis in the second and third cases here narrated (where it was less complicated by twitching movements) appeared more distinctly in the execution of complex actions than in the mere exertion of force.

While thus these cases seem to afford some evidence of the cerebral nature of chorea, it will be observed that none of them could be presumed to arise from embolism.

ECLAMPSIA NUTANS, OR NODDING CONVULSIONS.

CASE IV.—*Frequent attacks of nodding and nystagmus in an infant: Family history tubercular: Slight strabismus: Subsequent occurrence of two general convulsion fits, and complete recovery.*

A female infant, 7 months old, was sent to me on Jan. 12,

1875, by Dr R. W. Forrest. The family history pointed very strongly to a tubercular tendency. This child had been suckled by her mother: she had as yet no teeth: she had been rather a restless infant, but had remained healthy up till three weeks before the above date, when she had an illness associated with a little vomiting, and some suppression of the urine. This, however, passed away in a day or two. In the course of a few days after this illness, the right eyeball was noticed to oscillate in a lateral manner (nystagmus), and nodding movements of the head, sometimes of a vertical but chiefly of a lateral character, were noticed. This was supposed at first to be a "trick," but it increased to such an extent that it became obvious that there was something wrong. The noddings were, as a rule, worse at nights, and also apparently after sleep: they seemed also to come on in connection with turning the head to the left shoulder, to which there was a special tendency. The noddings ceased during sleep. About a week after the beginning of this illness a marked squint was noticed, and some degree of internal strabismus of the right eye could be recognised when I saw the child. Some swelling about the right orbit was also spoken of by the mother. The right eye appeared somewhat staring, but the child seemed to see with it, and it was not paralysed in its movement: the pupils were equal and sensitive to light. No loss of consciousness could be presumed to exist in the child during these nodding attacks. A week before she was brought to me the right hand was noticed to be turned upwards and backwards in a curious way on one occasion, but no general conclusions had occurred, and no paralysis existed in the limbs. There was said to be some tendency to throw the head back, but there was no persistent rigidity of the nape of the neck. When seen on January 12, the child appeared to be quite intelligent, and the head to be well formed. The noddings actually seen by me were slight; they were chiefly lateral, but a few vertical nods were also noticed. The nystagmus was seen several times also, the movements being lateral. The tendency to turn the head to the left

shoulder, already spoken of, was also observed. Bromide of potassium, which had been begun by Dr Forrest, was recommended to be fully tried, and cod-liver oil was also suggested.

On February 12 it was noted that one tooth had appeared, and that no special change had occurred in the nodding movements of the head or in the nystagmus, except that the motions of the eyeball were more rotatory than before.

I did not see the child again for some months, till Nov. 20, when I made the following note: Dr Forrest, however, had seen her occasionally:—"Had measles in February, and thereafter went to England: had a feverish attack there. Convulsion fit in April, and another in July: supposed to be connected with cutting the teeth. Since this second convulsion fit, there has been no nodding. The mother mentions that she noticed that while the nodding continued no discharge came from the nose such as is usual in a healthy child. At present the child is quite healthy looking and intelligent, and has no nodding and no nystagmus."

Dr Forrest informs me that the health of this child has remained good.

Remarks.—The diagnosis lay in this case between tubercle of the brain and that peculiar nervous affection described under the names of "Eclampsia nutans," "Salaam Convulsions," "Nodding Convulsions." Although the family history pointed somewhat strongly in the first direction, the close resemblance of the history and the symptoms to the recorded cases of eclampsia nutans seemed to warrant this diagnosis with whatever of hope that view brought with it. Accordingly, in a note to Dr Forrest, dated June 12th, I find that, after expressing an opinion as to its being a slight case of "eclampsia nutans," I added: "Prognosis not necessarily very bad, but some danger, I fancy, of general convulsions or epilepsy coming on." Fortunately, although the former event occurred, the latter calamity has not overtaken the child, and the recovery, indeed, was gratifying beyond expectation. As in many of the recorded cases, this nodding was supposed at first to be a "trick." The noddings

in this case were slight, and never in the least approached the character of bowing or bending of the body sometimes seen, and indicated in the somewhat unfortunate term "Salaam Convulsions." In some of the recorded cases, however, the slighter preceded the severer manifestations. Thus, in Mr West's case (*Lancet*, February 13, 1841), the affection began with a "bobbing" of the head, supposed at first to be a "trick," and this passed afterwards into a "bowing" of the head and body. In Dr Faber's first case (See *London Journal of Medicine*, June 1850, page 569, see also p. 590) the noddings seem to have been chiefly to the left side, as in the present case, and there was likewise a squint. In various cases there have been noticed local convulsive movements in the limbs; and in Dr Davidson's case (*Liverpool Medical and Surgical Reports*, vol. 3, p. 39) a kind of emprosthotonus; the curious jerking of the right hand observed in Dr Forrest's patient here recorded, and the tendency to throw the head back, may be compared with these facts. The occurrence of nystagmus does not seem to have been noticed in the cases reported in this country, and this point, indeed, with the tendency to turn the head to the left shoulder, raised in my mind a certain suspicion of grave cerebral lesion, most probably tubercular, which the complete and continued recovery of the child may be supposed to negative. Dr Steiner, however, in his *Compendium of Children's Diseases* (Dr Lawson Tait's translation, London, 1874, page 82), speaks of this eclampsia nutans being accompanied with nystagmus, and he appears to speak of it as being of commoner occurrence, and of less serious import than is usually supposed. In addition to the cases already referred to, the reader who is interested in the subject should consult Newnham's cases in *Clay's British Record of Obstetric Medicine*, vol. 2, 1849, and Dr Barnes' paper on Eclampsia Nutans, in the *Liverpool and Manchester Medical and Surgical Reports* for 1873, where the author gives a short account of the affection, as well as of a case of his own, and also numerous references to the literature of the subject.

VI.—REMARKS ON THE TREATMENT OF CHRONIC INVERSION OF THE UTERUS.

Read before the Greenock Medical Society.

By WILLIAM A. WILSON, M.D., Greenock.

UNTIL recent years, the treatment of Chronic Inversion of the Uterus consisted in the choice of different modes of removing the entire organ—a most hazardous operation, which mutilated the patient, and rendered her for ever incapable of performing the functions of her sex. But since the discovery of anaesthetics, a method has been adopted by which the uterus is, in many cases, restored to its normal condition.

M. Valentin,* in 1847, reduced an inverted uterus of twelve months' duration by "forcible taxis," the patient being under the influence of ether. In 1852, Mr Canney† and M. Barrier‡ published cases of inversion successfully treated by taxis, the anaesthetic used having been chloroform.

But Dr Tyler Smith, in 1856, published "a case of complete inversion of the uterus of nearly twelve years' duration, successfully treated on a new principle." He adopted the plan of keeping up constant pressure, by means of an air pessary in the vagina, inflating it to as great an extent as it could bear, while twice a day, for ten minutes at a time, he endeavoured by the hand to restore the uterus to its proper position. No very great change seemed to be brought about, until about the eighth or ninth night, when the patient felt a good deal of pain, and in the morning, when an examination was made, it was discovered that the inversion had completely disappeared. The previously profuse hæmorrhages ceased, menstruation became regular, and some months afterwards she was in perfect health, and subsequently became pregnant. Many cases have been treated successfully after Dr Smith's method, but some remained unreduced.

* From *Gaz. Médicale* in Ranking's Abstract, vol 7.

† Ranking, vol. 16.

‡ *Archives Gén de Médecine*, May, 1852.

It had been proposed by different writers, in those cases where the taxis and pressure failed, it might be advisable to incise the constricted part of the neck of the uterus, in order to facilitate reduction. Dr Barnes was the first to perform the operation successfully. He published,* in 1869, the details of a case, in which, after the treatment of elastic pressure and taxis failed, he proceeded "by the aid of a plan which I have advocated in my lectures for the last twenty years, and which has been suggested by Huguier, Simpson, Sims, and others. This consists in incising the os uteri at two or three points of its circumference, so as to relax the constriction formed by the circular fibres of the cervix, before applying the taxis." This treatment was entirely successful, reinversion was easily accomplished, and the patient afterwards bore a child safely.

The following case, of sixteen months' duration, occurred in my practice. Having failed to reduce by taxis and continued pressure, I was glad to avail myself of the means adopted by Dr Barnes.

In September, 1875, I was consulted by Mrs. M., twenty-one years of age, who had been confined of her first child on the 21st December of the previous year. She stated that her labour was natural and the child quickly born, but the placenta was adherent and some difficulty was experienced in its removal, and she suffered for three days from what she described as after-pains. About three weeks after her confinement, while at stool, something came down beyond the vulva, which a neighbour said was the womb, and pushed it back into the vagina. She has complained ever since of pain of a dragging character, and a sense of great discomfort, and every few days she has had a slight bloody discharge from vagina. About three months ago she became troubled with frequent desire to micturate, with great pain in the back.

She was somewhat anæmic, was nursing her child, but felt unable to undertake her usual household duties.

* *Medico Chirurgical Trans.*, vol. 52, p. 179.

On examination per vaginam, I found a tumour about the size of a hen's egg, pear-shaped, firm to the touch, not painful, attached to the inner surface of the anterior lip of the uterus, by a pedicle about the thickness of one's thumb; the finger could be passed behind the pedicle of the tumour into the neck of the womb.

I diagnosed a fibroid polypus of the uterus, and advised its removal, and recommended her to wean the child.

I was requested to see her again on the 1st December, as she had had severe flooding on several occasions since I last saw her; she was now weaker and much more anæmic. I urged her to have the tumour removed, and she now gave her consent.

Accordingly on 3rd December, I seized the tumour with a vulsellum, drew it beyond the vulva, and passed the wire loop of an *écraseur* over the tumour to its pedicle. On passing my finger up to guide the wire previous to tightening it, I found the surface of the tumour terminated above in a perfect cul-de-sac, its surface being continuous with that of the vagina; the dragging down of the tumour had quite obliterated the posterior lip of the os-uteri. It was now evident that I had to deal with a case of inversion of the uterus, and this explained what had struck me whenever the tumour was exposed to view, viz., its great vascularity. The patient was immediately put to bed, and a morphia suppository was introduced into the rectum.

No bad effects followed, and three days later I made an examination, in the following manner: I passed a sound into the bladder, and introduced a finger into the rectum, and found from the absence of the body of the uterus between the sound and my finger, that my diagnosis of inversion was confirmed.

I proceeded next to attempt reduction by *forcible taxis*, by placing the left hand over the hypogastric region, and introducing the right into the vagina, and grasping the tumour, attempted to reduce it; this I did for about twenty minutes daily, for fourteen days; at the end of this time very little progress had been made, I could only sink the

uterus about half an inch within the external os; I had now to desist for a time as the hæmorrhage had returned. Tincture of the perchloride of iron and other astringents were applied locally, till the hæmorrhage ceased, when I again made repeated attempts at reduction under chloroform with no better results. I then tried keeping up elastic pressure with an air pessary, and occasionally attempting reduction under chloroform; this pessary was kept in the vagina for a fortnight with no benefit.

In April it was evident that unless some means were adopted capable of arresting the hæmorrhage, which was exhausting her, she would soon succumb; she was now quite anæmic, extremely weak, breathless; she had slight œdema of the feet, her appetite had failed, and the stomach would scarcely retain even the simplest food.

On the 14th April, 1876, assisted by Dr. Marshall, I placed the patient on a table on her elbows and knees, drew down the uterus beyond the vulva, introduced a Marion Sims speculum into the vagina, and with a curved bistoury, made three longitudinal incisions into the constricted neck of the tumour, each incision about three quarters of an inch in length and nearly a quarter of an inch in depth; I then passed the uterus back into the vagina, and proceeded to re-invert. The reduction was effected easily, and with a distinct feeling of tearing of the uterine tissue. There was very little hæmorrhage during the operation. A morphia suppository was introduced into the rectum, and patient placed in bed. She felt sick and vomited during the afternoon, but passed a good night. She did well for a fortnight after the operation, had no pain, sickness, nor fever, was taking her food and gaining strength—when she was seized with a severe attack of enteritis, caused as she supposed by partaking too freely of rich food; this reduced her very much, and it was not till the end of June that she was quite well and able to resume her usual duties. Four months after the operation menstruation took place, and she has been regular ever since. I made an examination in September, and found the uterus in situ, and

two inches in length, but not so moveable as usual, there being evidently some adhesion of the body of the uterus behind. She had improved in strength and expressed herself as being as strong as she ever had been.

Dr Thomas,* of New York, relates a case in which the treatment by operation failed, or rather could not be completed on account of hæmorrhage. The inversion was of 21 months. Several attempts at reduction by forcible taxis, and by wearing a vaginal air pessary, had failed. The uterus was drawn down, and an incision made in the tissue of the neck towards the subjacent peritoneum. A free jet of blood followed. Many attempts were made to tie the vessel, but failed. The bleeding was at last stopped by stitching the lips of the wound together. A week later the following remarkable proceeding was carried out. The uterus was lifted up, so that the operator could feel the cervical ring against the abdominal wall. He then cut down in the median line, as for an exploratory incision in ovariectomy, he then inserted his finger into the uterine sac, and found there was no adhesion. He then inserted a steel dilator, made on the principle of a glove-stretcher, into the cervix, and expanded the blades. The dilation was easy and rapid, but contraction returned as the dilator was withdrawn. The uterus was drawn down, and one horn pushed in, then the other, and the organ was reduced. The vessel, which had bled so freely a week before, burst out again. This was, however, stopped. A finger was passed through between the uterus and bladder. The abdominal wound was closed by silver sutures. The vaginal rent was not interfered with. The patient quite recovered.

Dr Matthew Duncan gives, in the *Edinburgh Medical Journal*,† three cases of chronic inversion. Of these two were cured—one by forcible taxis, the other by operation and taxis combined. In the third case the inversion was of fourteen years. Other means having failed, he operated by incising the uterus, and attempted to replace by forcible

* Retrospect of Medicine, &c., New Sydenham Society, 1870.

† Edinburgh Medical Journal, March, 1877.

taxis; but although most powerful efforts were made, reduction was not effected. The uterus was afterwards removed by ligature and excision. The patient died from peritonitis. Dr Duncan says "that complete inversion of the uterus is a condition of the body of the uterus, and that the condition of the cervix is of trivial import. It may be inverted, or it may not. If it is inverted, it is easily replaced, and its replacement does not facilitate the replacement of the organ." In his cases he incised the *uterus* on its anterior and posterior surfaces, the incisions extending from just below the internal os to a little above the middle of the body of the uterus.

Of these five cases treated by operation, three were successful, two unsuccessful—one of the latter on account of hæmorrhage from the incision.

We may conclude that the removal of an inverted uterus is not justifiable, until all means of reduction have been tried, and among these measures we must class the operation of incising the constricted internal os or part of the uterus itself, and afterwards attempting reduction either by forcible taxis or by more gentle measures, as by means of air bags in the vagina.

CH.—CASE OF PARACENTESIS PERICARDII.

~~By DONALD MACLEOD, M.D., Kilmarnock.~~

R. M'A., aged 23, by occupation a farmer, of sanguine temperament, vigorous constitution, and never having suffered from any previous illness, was seized, after a severe wetting followed by a chill, with wandering pains about the left side of his chest for a week previous to my first seeing him.

On 1st April, 1874, when called to visit him, he was complaining of difficulty of breathing, with sharp pain below the left nipple. He had profuse perspiration, of a disagreeably acid odour; his urine was loaded with urates. He had urgent thirst; decubitus by preference on back; slight inability to

lie on left side ; pulse and temperature nearly natural. Joints free from pain.)

Physical examination of the chest revealed distinct friction sound of a to-and-fro character over the præcordial region, and there was dulness on percussion extending slightly beyond the natural area.)

He was ordered to have half-a-dozen leeches applied to the seat of pain, and fifteen grains of each of the bicarbonate and acetate of potass, largely diluted, every two hours, and a calomel and opium pill every eight hours.

2nd April.—Pain and difficulty of breathing greatly relieved, dulness on percussion and friction sound somewhat less. To have cantharides blister, 4×4 , applied to neighbourhood of heart.

3rd April.—Pain and difficulty of breathing gone ; friction sound scarcely audible ; dulness on percussion confined to natural area.)

From this time till the 28th April patient continued to improve steadily, and nothing abnormal could be heard over the region of the heart.

On the 29th April he sat up in bed for the first time since the commencement of his illness, but he no sooner did so than he was again seized with severe catching pain under his left breast. His pulse rose to 120, the urine was again loaded with urates, and he could not lie on the left side.

The treatment which was found so effectual in the previous attack was again steadily followed. Despite the most assiduous use of these means, signs of daily increasing pericardial effusion became manifest. Friction sound, which was present for the first few days of this attack, was no longer audible, and the dulness gradually increased till it reached the second rib in the upward and the level of the diaphragm in the downward direction. Transversely it extended from the right margin of the sternum to about two inches beyond the left nipple outwards.)

The sounds of the heart were obscure and distant. Coinciding with the effusion into the pericardium, pneumonic consolidation of the left lung set in, involving fully more than

the lower half of it—due, no doubt, to the pressure caused by the distension of the pericardium. A loud systolic murmur could now be heard over the base of the heart.

⤵ The thrill and its accompanying undulatory motion, said to be common in cases of pericardial effusion, could not be clearly made out in this case, although any sudden movement of the patient gave rise to something like it. The pulse ranged from 120 to 130 per minute, small and irregular, and the respirations from 30 to 35 and shallow.

As the treatment failed to check the pericardial effusion, and as it became evident the patient must soon succumb to the daily increasing distension of the pericardium, I determined on performing the operation of paracentesis pericardii. ⤵

⤵ A consultation with Professor Gairdner was obtained with this object in view. The operation was performed with a medium-sized needle of a Dieulafoy's Aspirator, and the place selected for its introduction into the pericardium was the fifth intercostal space about two inches from the left margin of the sternum. ⤵

⤵ Twenty ounces of a slightly blood-tinged serous fluid were drawn off. The operation was followed by the most marked relief to all the distressing symptoms. The pulse, which before was weak and irregular, became stronger and regular, and also less frequent. The breathing assumed its natural frequency, and the physical signs indicative of pericardial effusion disappeared. The lung, which was in a state of consolidation to very nearly its whole extent previously, gave forth its natural respiratory murmur immediately after the operation was completed. ⤵

⤵ Temporary relief, however, was all that was gained by the operation, for in a few days signs of effusion into the pericardial sac returned. Embarrassment to the heart's action and breathing gradually took place, and the operation had to be repeated on the 14th May. Again the most marked relief followed the drawing off of thirty ounces of serous fluid more deeply tinged with blood than on the previous occasion.

Complete freedom to the heart's action again continued for a few days, when the signs of returning oppression to the circulation and respiration slowly set in. On the 25th May the Aspirator had again to be resorted to for relief, when about fifteen ounces of a still more bloody-looking serous fluid were drawn off.)

The relief obtained this time was as great as after the former operations, but less enduring in its results. The lung, which had recovered so completely its natural condition after the first operation, became again consolidated before the third operation was performed, and remained so, with the additional complication of effusion into the left pleural cavity.

The heart's action soon became feeble and irregular, without signs of effusion, in any great quantity, into the pericardium, and after continuing for two days in a state of low muttering delirium the patient quietly died on the 28th May.

Remarks.—The object of publishing this case—which I believe to be of rare occurrence, judging from the few cases recorded of late years—is to show the marked and unmistakeable relief that follows the operation of tapping the pericardium, where pericarditis, whether rheumatic or non-rheumatic, terminates in some effusion. No doubt the success attending this operation has hitherto been but small, but that can hardly be advanced as a sufficient reason for its non-performance when required. The formation of an accurate diagnosis is essential to its success in the first instance, whether it may be successful ultimately or not. This is not so difficult as might at first sight appear, in cases likely to require interference of this kind, when we keep in remembrance that * “dulness of a pyramidal form occurring suddenly in a previously healthy person is symptomatic of pericardial effusion, and affords a tolerably accurate measure of its amount.”

The operation itself is ~~divested of many of its difficulties,~~ and ~~easy to perform,~~ by the introduction into practice of one of the most ~~invaluable~~ of instruments—the Aspirator; and

* See Fuller on Diseases of the Heart and Heart Vessels, p. 73.

were it not to show the vast strides made by science in this direction, it would be unnecessary to refer to the formidable recommendation of Senac, and Skellderup, and Lænnec, to trephine the sternum, with the view of more securely reaching the pericardium before tapping it.

While so much has been achieved in the mode of performing this operation, the same can scarcely be said of our advancement with regard to the treatment of the disease for which the operation is required. ~~xx~~ We yet await the discovery of a certain remedy whereby the re-accumulation of effusion into the pericardium can be prevented. In our search for such means we must look to the earlier writers on this disease rather than to those who have written on the subject in more recent times. The only author who has ventured on actually carrying this intention into practice, so far as I can discover, is Dr Aran.* In this interesting case, Aran tapped the pericardium twice, each time injecting into it an iodinous solution, composed the first time of tinct. iodine, fifteen grammes; iodide of potassium, one gramme; water, fifty grammes. The second time the strength of the solution was increased to fifty parts of the tinct. of iodine to the same quantity of distilled water, with the addition of four grammes of the iodide of potassium. The success of the operation was complete, the patient recovering perfectly. ~~xx~~

I fear few practitioners in private practice will be willing to imitate the example of Aran, so that we must leave it to hospital teachers to further elucidate the practice so ably advocated by one of the most skilful physicians.

Better reason cannot be given for resorting to this operation than that laid down by Trousseau in his admirable lectures on Clinical Medicine,† wherein he states, "But if we cannot hope in such cases to cure the patient by withdrawing the fluid from the pericardium, we are at least certain of relieving suffering and prolonging life by removing a serious complication involving imminent danger. Had paracentesis of the pericardium no other reliable claim, this would entitle

* Bulletin de l' Académie de Médecine, xxxi., p. 142.

† Lectures on Clinical Medicine, vol. iii., p. 395.

*Dr Macleod.
Glasgow med. Soc.*

it to a place among operations worthy of being retained and sanctioned. When we witness the anxiety produced by the pressure of fluid on the heart—when we witness the fearful and protracted agony resulting from such a state, we are only too happy to have it in our power to afford even temporary relief, and be able to prolong a life which we have rendered less painful to endure.”

VIII.—THE MOTIONS OF THE BRAIN, WITH ILLUSTRATIVE GRAPHIC TRACINGS.

By WM. JAMES FLEMING, M.B., Lecturer on Physiology, Glasgow Royal Infirmary School of Medicine.

WE have recently had numerous investigations made by physiologists as to the variations in bulk of parts of the body, due to the constantly varying quantity of blood contained in them. The applicability of the graphic method to such researches has probably determined the circumstance, that most of those lately recorded have been performed in M. Marey's Laboratory in the College of France.

First among these are the experiments by Dr Francois-Franck, upon the “Volume of organs in its relation to the circulation of the blood,” published in Marey's “Travaux du Laboratoire” for 1876. In this able paper Dr Franck gives a very complete bibliography of the subject, especially pointing out how far and in what directions the subject had been investigated by Dr Piegu, MM. Chelius, Fick, and Mosso, and others, for the details of which we must refer the reader to Dr Franck's paper. Suffice it to say, that two principal factors seem by these researches to be shown to produce change in the volume of an organ—viz., change of pressure in its contained vessels, and change of calibre of these vessels themselves. Of course, these two act and re-act on each other, so as to be in a certain sense interchangeable, but nevertheless, as we will see, they can to a great extent be studied separately. Dr Franck experimented upon the volume of the hand with the aid of his now well-known apparatus, con-

sisting of a glass vessel of water into which the hand is introduced through an india-rubber membrane covering the top. The membrane is also perforated by a tube with a considerable dilatation upon it just after it emerges from the apparatus, one end of this tube being in the fluid, the other attached to the tube of a tambour. The dilatation does away with the oscillation of the column of liquid; and it is evident that any change of bulk in the enclosed member will alter the pressure of the air in the tambour system and permit of inscription on the cylinder. With the aid of this instrument, Dr Franck has shown that the motions thus obtained must be considered as the "summation of the changes of volume of the small vessels of the part," and that these bear the same relations to the heart's actions as do the motions of a single large vessel, both as to form and sequence.

The tracings are all dicrotic, and are influenced by mechanical and nervous causes, very much in such a way as would *prima facie* be expected.

These most interesting researches have, as an almost necessary complement, led to a similar investigation of the changes in volume of the brain; and we find the concluding paper in the same work, by M. A. Salathé, devoted to the consideration of this subject. We have also the papers of Dr Carlo Giacomini, of Turin, and Dr Mosso, which appeared about the same time; and another paper by Dr Francois-Franck, in the last *Journal de l'Anatomie et de la Physiologie*. At Dr Wm. M'Ewen's request, and with his assistance, I had been occupied during a considerable part of last winter investigating the same phenomena in two cases under his care. The following notes of the physical condition of the apertures he has kindly supplied:—

Thomas M'Donald, æt. 13, was admitted on February 9th with an aperture in the skull, which had been occasioned some months previously by a blow which he received in a coal pit. The aperture was somewhat circular, situated on the top of the head near the coronal suture, about the size of a penny, the dura mater being exposed and found at a somewhat lower level than the inner surface of the skull. On introducing the probe the dura mater was found detached from the skull for a distance of nearly $\frac{1}{2}$ inch

round the aperture in the osseous plate. The dura mater was covered with granulations, from which a profuse discharge of matter exuded. The cerebral pulsations were distinctly felt through the membrane. Cardiographic tracings of the pulsations were taken on several occasions, and once whilst under chloroform, in order that a plastic operation might be performed for the covering of the aperture of the scalp.

William Hislop, æt. 16, admitted with a scalp wound on right side of head behind the ear, leading down to a fracture of the skull. The portion of bone was depressed $\frac{1}{4}$ inch. There was besides a deficiency in the osseous wall of the skull situated over the left eyebrow, which he stated had been occasioned by a fall from three storeys in height about ten years previously, for which he was treated in Edinburgh Royal Infirmary. After the recent fracture of the skull was completely healed, cardiographic observations were taken on the cerebral pulsations, which could be easily felt through the aperture in the skull. This aperture, more particularly was situated over the left eyebrow on the left side of the brow. It measured $1\frac{1}{2}$ inches in length and $\frac{3}{4}$ inch breadth in its broadest part; the widest part being situated about the middle of the length, and gradually tapering toward each extremity. It ran obliquely across the brow from below upwards and from left to right, the lowest portion being in a line with the outer canthus of the eyelids.

I was upon the point of publishing my results, when M. Salathé's paper in *Marey's Travaux*, above referred to, came under my notice. As our method of observation and results coincided in the most marked manner, I think it will be best to give a summary of the conclusions come to by the experimenters above-mentioned, with those independent observations by which I have been able to verify most of them; to point out the few cases in which our observations seem discrepant; and to add some tracings which I have had opportunities of obtaining, and which have not been recorded by the others.

M. Salathé, experimenting on the fontanelles of infants, on patients in whom a part of the skull was wanting, and upon animals with openings into the cerebral and spinal cavities, and working with the graphic method, has arrived at the following conclusions:—

1. The modifications of the calibre of the vessels of the brain are the cause of the movements of that organ. These are related to the cardiac and respiratory actions, and produce rhythmic changes in the volume of the encephalon.

2. After trephining the spinal canal, the same tracings can be obtained from it, and these are synchronous with those of the encephalon.

M. A. Salathé attributes much importance to the flow of the cerebro-spinal fluid from the skull to the vertebral canal. He says: "The quantity of liquid contained in a completely ossified skull is always the same; inverse variations are continually being produced between the quantity of blood and the quantity of the cerebro-spinal fluid, which, in consequence of the partial extensibility of the walls of the spinal cavity, can flow there when the volume of the encephalon augments, to return to the cranium when it diminishes."

To these variations are due the cardiac and respiratory actions. Mosso adds a third, slow and rythmical, analogous to the contraction and expansion of the individual vessels which is supposed by most physiologists to be constantly going on, and which was first pointed out by C. Bernard as easily seen in the rabbit's ear. These have been named Pulsations, Oscillations, Undulations.

In the adult man, when the respiration is calm, it is only the cardiac influence which produces variations; but the respiration being forced affects the movements proportionally and may even mask those dependent upon the heart.

3. The movements are almost the same as those of a single artery, and the tracings are fairly comparable to a sphygmographic tracing.

4. Ansæthesia does away with the respiratory curves.

5. Artificial respiration reverses the relations of the curves, which normally rise with expiration and fall with inspiration.

6. The influence of attitude is great; when the head is lowered, a marked increase of volume taking place, and *vice versa*.

7. Absolutely similar movements can be shown as the result of similar causes in other organs, most conveniently the hand.

It now behoves us to enter at some length into the consideration of 1st, The mode of experiment by which these results have been obtained. 2nd, The theoretical considera-

tions bearing upon them. 3rd, The records upon which they are founded.

The experiments have been performed upon—infants with the fontanelles still open; adults with loss of part of the skull from disease or accident; and animals in which part of the skull or vertebral column had been removed by operation.

In all these, except the last, the motion of the encephalon has been received by the button of a Marey's cardiograph, or similar instrument, and from it transmitted to a recording tambour writing upon a revolving cylinder.

In the case of some of the animals, instead of the receiving tambour, there has been employed a tube screwed into the hole made by the trephine, partly filled with water, and connected with the recording tambour. The perfect similarity of the methods employed by the various experimenters, even when working quite independently of each other, gives unusual facility for comparing their results, and in many cases affords almost a demonstration of their accuracy. Instances of this we shall meet with as we go on.

Some of the tracings, indeed, which the author has obtained might be *fac-similes* of others taken by different observers from different patients. This is another testimony to the value of the graphic method.

To come now to the more theoretical considerations, we must consider some of the circumstances in which the encephalon is placed. Admitting, as all must do, that the cranium is a rigid box containing no air, it has long been a question with physiologists whether or not a variation could take place in the quantity of its fluid contents. For an excellent summary of this controversy, we must refer our readers to Dr Francois-Franck's paper above quoted; suffice it to say, that although no one can now believe that the actual quantity of fluid in the cranium is liable to variation, yet it is easy, remembering that we have there two fluids, separated from each other only by elastic and freely extensible membranes, to understand that the relative quantity of these fluids may largely

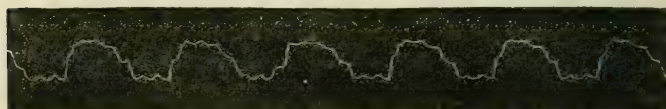
alter, and that such an alteration implies movement of the cavities in which they are contained. Admitting, then, that the blood and cerebral fluid are, so to speak, interchangeable, when the cerebral fluid is driven from the cranium by the arrival there of more blood, it can only flow into the spinal canal. Anatomically the channel for it so to do is open, and we have only to remember that the spinal canal itself is not like the cranium, rigid nor entirely filled with the spinal cord, to enable us to understand how it can receive the overflow of cerebro-spinal fluid from the cerebrum. A certain amount of yielding probably takes place at those parts where it is more or less bounded by softer tissues, and the alternate filling and emptying of the vascular system of that packing with which it is surrounded probably permits it to receive and return a considerable quantity of fluid to the cerebrum, so as to keep up the necessary equilibrium. How this function of the spinal canal is affected by gravity, atmospheric pressure, &c., remains to be determined.

If from any of the causes above mentioned the complete closure of the skull is interfered with, we all know that the movements of the encephalon are easily seen, but it has been argued that these movements do not take place when the cranium is intact. The above considerations will I hope show that although the quantity of fluid never varies, the proportions of the two fluids does, and this entails movement of the substance in which they are enclosed, so that the motions recorded in these experiments are the same as those normally occurring in the closed skull. It is shown by M. Salathé, both by experiment upon the dead body, and by tracings from the spinal cord of animals, that such an interchange takes place, and it is evident from the tracings that the motion of the cord is due to fluid sent to it from the brain, and not to the influence upon it independently of the heart and respiration, for the amount of the variations is much greater than the relatively small bulk of the cord * compared with the brain would account for.

* The relation in bulk given by anatomists is about $\frac{1}{16}$.

We now come to consider the direct causes of this cerebral movement, and to enable the reader more easily to understand this I give one of my tracings in which the pulsations and oscillations are well marked.

Fig. 1.*



Tracing from brain of **strong cat**. Skull trephined. Complete ether anæsthesia.

Here the large curves are respiratory oscillations, the small notches cardiac pulsations. It will be noticed that in this instance there are always eight cardiac pulsations in each complete act of respiration. The ascending part of the curve is expiration, the descending inspiration.

In this then we have a double set of curves produced by the cardiac and respiratory acts, but in which the cardiac is obscured and subordinated to the respiratory. It is impossible in the cardiac pulsations to differentiate the different parts of the curve. All we can say is that notches in the respiratory curve are produced.

On the other hand, if we study this tracing from Hislop, where the respiration curves are barely perceptible as they always are during quiet breathing, it is scarcely possible to distinguish it from a tracing of the radial.

Fig. 2.



Normal tracing from Hislop.

We have the dicrotic notch well marked, and the relations between the different parts of the curve as usual in a

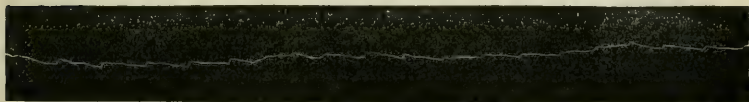
* The tracings have been photographed directly from the originals on to the wood block by Messrs Gilchrist & Fyfe, and thus great accuracy has been insured. They all read from left to right.

sphygmographic record. These then may be considered as examples of the types in which respectively, the respiratory and cardiac actions predominate. As to the third class of undulations described by Mosso and Francois-Franck, they are so slight and require such long tracings for their demonstration that although some of my results show them sufficiently to convince me of their reality, in common with these authors, I find it impossible to reproduce them.

The next point to be considered is the effect of varying conditions upon the tracings, and these conditions may be conveniently summarised, as (a) respiratory, (b) circulatory, (c) postural, (d) digestive, and (e) mental. Under (a) respiratory we, in common with the other physiologists referred to, have investigated forced respiration, arrested respiration, coughing, speaking, &c.

In tracing 3 (from M'Donald) the effect of deep breathing in increasing the respiratory curves and obscuring the cardiac is well marked, as we would, *prima facie*, expect it to be.

Fig. 3.



Deep breathing (M'Donald).

The curious effect of holding the breath, both during its continuance and subsequently, is peculiarly well shown in 4, which is from Hislop.

After the moment, as indicated in the cut, at which breathing was suspended, we have for three pulsations no perceptible effect—from this point the whole line shows a gradual elevation corresponding to an increase of tension, and at the same time each pulsation becomes longer and stronger, and the dicrotic notch more marked and generally doubled; a slight fall then takes place in the tension, probably owing to an effort of the thorax to inhale, immediately followed by a marked rise, culminating in what we may call a

gigantic pulsation. The trace then gradually falls until breath was taken, when, after two or three irregular pulsations, it returns to the normal.

This we consider a remarkable record, and are inclined to think the production of the double dirotism under these known conditions might help to solve the yet undecided problem as to the cause of this phenomenon. However, although in this case more than usually marked, in some of the pulsations being not only doubled, but trebled, it must be remembered that all the tracings taken from Hislop show more or less a tendency to double dirotism. We can easily understand how the partial arrest of the venous return, due to the increased intra-thoracic tension, would tend to the exaggeration and *earlier* and even multiple occurrence of the notch, if, with Marey, we consider it due to a reflected wave; but if we can conceive a double action of the aortic valve in ordinary conditions, which, I confess, I am unable to do, it is even more improbable under the circumstances of increased intra-thoracic pressure with which we have here to deal; and therefore this seems to me an argument against this latter explanation of the phenomenon.

In Hislop's case, in which these appearances are most marked, it will be seen from Dr M'Ewen's report that a considerable thickness of tissue intervened between the brain and the instrument; and it has occurred to me that one of the notches might be due to the engorgement of the small vessels of this tissue following, as we would expect it to do, at a short interval, the dilatation of the more centrally-situated and freely-supplied deeper parts. Indeed, bearing in mind M. Francois-Franck's observations on the

Fig. 4.

Breath held at beginning taken just before end of trace.—Hislop.

increase of volume of the hand,* the possible effect of this factor in the production of some obscure phenomena of double dicrotism seems worthy of attention.

The effect of coughing, as shown in the following tracing (from M'Donald), puts in black and white the physiology of the action both as affecting the respiration and circulation.

Fig. 5.

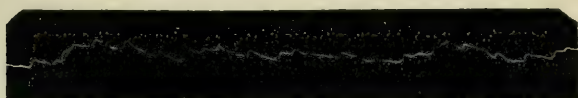


A cough.

We have the long breath, followed by the sudden expiration, at once increasing the vascular tension and the rapidity of the cardiac beats, and then both tension and rapidity gradually coming to the normal.

In speaking, we have less sudden changes, but marked effects on the respiratory oscillation, reacting on the cardiac curves.

Fig. 6.



Speaking.

M. Francois-Franck has shown that "straining" produces an enormous augmentation of the volume of the brain, with increased frequency and dicrotism of the pulsations.

Circulatory.—Effects of interference with the circulation.

Numerous experiments have been tried on the effect of compression of various blood-vessels by all the physiologists referred to above, and they have arrived at very similar results. We ourselves have investigated the effect of the general excitement of the circulation produced by the slight

* Francois-Franck. *Travaux du Laboratoire*, 1876.

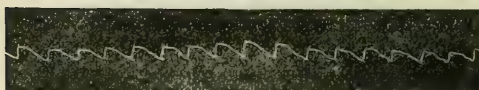
exercise of walking quickly, in the case of Hislop, as shown by the following tracings:—

Fig. 7.



Before exercise.

Fig. 8.



After exercise.

Here we have marked increase in the force of the pulsations, and in the respiratory oscillations, but no great increase in frequency.

Compression of the Femorals.—The continental observers whose works I have been able to obtain, do not give a record of the effect of compression of the femorals upon the brain; but Francois-Frank gives a trace of the effect of this manœuvre upon the volume of the hand, and the following trace, taken from M'Donald, is interesting, coinciding so closely as it does with Francois-Frank's trace (*Travaux du Laboratoire*, 1876, p. 32), taken from the hand under like conditions.

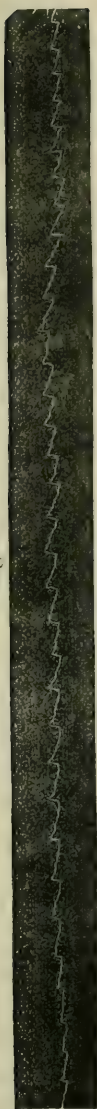
Here we see the increase in the bulk of the encephalon, produced by diverting the large quantity of blood which goes to the lower limbs and confining it to the trunk and head. This may have practical bearings as shewing the feasibility of the plan of treatment of cerebral anæmia, in which it has been proposed to increase the blood supply to the brain by compressing the great trunks. Dr Francois-Frank has shown, in the case of the hand, that a converse result may be produced by engorging the lower extremity with blood by means of a suitable aspirating apparatus; but that in the case of the brain, although a similar effect is produced,

it is comparatively slight. The relations before dwelt upon of the cranial and spinal cavities probably explain this.

The difficulty of compressing the carotid in man without interfering with the nerves and veins with which it is so closely associated, has prevented very clear results being obtained from experiments upon it, although Mosso has succeeded, and asserts that the changes are the same as those produced upon the volume of the hand after the compression of the brachial—that is to say, an absolute diminution of volume and also of extent of movement. "After the cessation of the compression, the cerebral pulsations present during a certain time an exaggerated amplitude—as if the vessels, unaccustomed to the interior pressure, allowed themselves afterwards to be passively distended. Their normal tonicity is only recovered little by little, and its restitution restores the amplitude of the pulsations to their initial value." —(Francois-Franck. *Journal d'Anatomie*, loc. cit.). Several theories have been advanced by these authors, amongst which the effect upon the heart itself and a change in the resistance of the vascular walls, probably due to temporary arrest of their nutrition, have seemed the more probable. Indeed, from many considerations the last hypothesis alone is probably sufficient to account for the phenomena. An attempt to compress the carotids in M'Donald's case gave us results so contrary to this statement, and so inexplicable on any other hypothesis, that we must consider them as untrustworthy.

The uniform effect seen in them is great augmentation of the cerebral bulk, and, indeed, a tracing closely resembling that produced by compression of the jugulars in the case of the brain, and of the venous circulation in the case of the hand.

Fig. 9.



Release.

Both Femorals gradually compressed.

Compress.

No doubt it is conceivable that this may be due to an effect either on the heart or vessels, produced by action of the nervous centres set up by the disturbance in their circulation; but further information is wanting upon this subject, and we are glad to know that Francois-Franck proposes soon to publish the results of investigations upon it.

Compression of the jugulars is shewn to produce, as might be expected, augmentation in the bulk; but it is noteworthy, that although this augmentation is of the same character as the increase of volume of the hand when the venous circulation is interrupted, nevertheless it is of much less extent, and is not accompanied by the change in the form of the cardiac curves, which is so marked in the case of the hand. These differences are obviously due to the impossibility of controlling the whole venous return from the head, as can be done with the hand, and to the compensating effect of the motion of the cerebro-spinal fluid so often insisted upon.

Posture.—The effect of posture is recorded by all the observers as nearly the same. Those positions, which tend from gravity to increase the quantity of blood and cerebro-spinal fluid in the brain, increases its bulk. Up to a certain point, and if, as in the recumbent position, they facilitate the influx of blood, they increase the force of the pulsations as well; but if the conditions are such as to cause more or less hernia of the cerebral substance through the opening, they diminish or even altogether do away with the motions communicated, the protruding part being, as it were, strangulated.

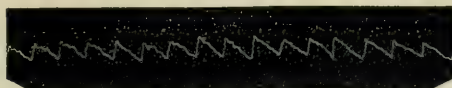
The elevation of the arms produces a marked increase in volume, as might have been expected.

Food and stimulants.—None of the papers I have seen give any experiment upon the effect of gastric conditions. I have fortunately obtained some good tracings of the effects of food and drink, and think that the following illustrations show that the effect of food is a marked increase of the extent of the cardiac pulsations. Compare the tracing Fig. 10, taken twenty minutes later, with tracing Fig. 2, taken just after dinner.

As soon as this tracing was completed, the lad, who was quite unaccustomed to the use of stimulants, took eleven ozs.

of Bass' beer. Tracings were then taken at short intervals, and the size of the pulsations and respiratory curves was found

Fig. 10.



Twenty minutes after dinner. Compare with Fig. 2.

gradually to increase, while their duration, especially that of the pulsations, was lengthened. This condition of matters seemed to reach its acme about ten minutes after the beer was swallowed, at which time the following record was obtained.

Fig. 11.



Ten minutes after a pint of beer, and half-an-hour after dinner.

Of course, in observations extending over such comparatively long periods of time, it is impossible to record the actual effect on brain volume; but when I come to sum up, I will endeavour to show that they are probably to be accounted for by a diminution in the whole bulk of the encephalon, perhaps due to the amount of blood drained off for the performance of the digestive function.

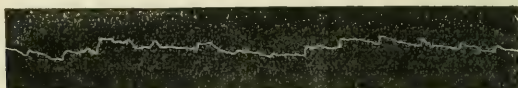
Mental Conditions.—There only remains to us now to consider the effect of mental states—and of these sleep, anæsthesia, and brain-work have all afforded various tracings, both in the hands of my foreign fellow-workers and my own.

It is not difficult to understand, however, that these conditions (except anæsthesia) lend themselves less readily to experiment than many of those already recorded.

As to sleep, we have had unusual opportunities of obtaining tracings during this condition, chiefly owing to the fortunate circumstance that the opening in M'Donald's head was situated almost in the centre of the cranial vault, which

permitted very easy application of the instruments, and to the fact that the boy was a very deep sleeper. We have taken advantage of these circumstances, and on several occasions obtained numerous tracings from his brain, not only during profound sleep, but also in various stages of wakening. As to the conclusions to be derived from these tracings, we cannot agree altogether with either M. Mosso or M. Salathé. In the first place, M. Salathé states that the respiratory curves are absent. This, we found, depended not upon the condition of sleep, but upon the condition of respiration, as, indeed, we think might have been expected. We are all aware that during sleep the respiration may vary from the most complete tranquillity to stertor; and, indeed, our tracings seem to show that respiratory oscillations are produced by less disturbances of the respiration during sleep than when awake. The following trace during profound sleep, when the breathing might be called "firm," but not forced, illustrates this:—

Fig. 12.



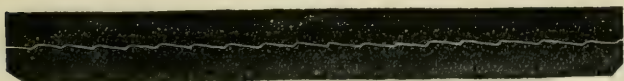
M'Donald asleep—breathing firmly.

Subsequently, during the same experiment, as will be seen in the tracings below, after his position was altered and the breathing became perfectly tranquil, the respiratory curves disappeared, to again recur on another change in the breathing.

The cardiac pulsations, on the other hand, were, in direct contradiction of the results of the observations of the two physiologists above mentioned, uniformly depressed, as seen in the subjoined, Fig. 13, which is a typical trace selected almost at random from a considerable number taken upon different occasions. It is indeed possible that the marked depression of the curves may be due to the button of the cardiograph having been applied with greater or less force than in the waking state; but as exactly the same

arrangement was used in all cases, and the chance of this error foreseen and guarded against, I am not inclined to

Fig. 13.



Sound asleep—breathing quiet.

accept this explanation. Indeed, on one occasion the tambour was applied when the boy was awake. He went to sleep with it *in situ*, and a tracing was then obtained, with exactly the same characters.

These results are not in accordance with the others mentioned above, and point rather to a condition of congestion than anæmia of the brain—the condition usually supposed to exist during sleep. However, it is worthy of notice that in M'Donald's case the normal, as well seen in the first few curves of No. 5, is not very high, although here the dicrotic notch is well marked, while it is nearly absent in the sleeping pulse.

It is very desirable that further observations be made upon this subject, and, I believe, M. Mosso is engaged in the investigation.

Anæsthesia removes the respiratory curves, and in M'Donald's case at least, the chloroform increased the height of the pulsations in a marked manner.

The effect of brain work is also difficult to record, chiefly because the result of fixing the attention produces an involuntary change in the character of the respiration. M. Francois-Franck gives a tracing in which during calculation the volume of the cerebrum seems increased, but little if any change being produced in the cardiac curves, but as a synchronous tracing shows that the respiration was at the same time much affected, he justly places little reliance upon this record.

In the subjoined tracing the rising of the whole line is slight if any, but the marked diminution of the height of the cardiac curves points to increased cerebral volume.

The similarity of this to the sleep tracing, Fig. 13, makes one wonder if the boy could have been dreaming.

Fig. 14.



Puzzled by question in multiplication.

In conclusion I have only to point out that these tracings afford important indications of three different things. 1st. The volume of the whole brain. 2d. The influence of respiration upon it. 3d. The influence of the heart beats. I have endeavoured to show that the first—the volume of the encephalon—depends upon the relative amounts of blood and cerebro-spinal fluid contained in the cranium. That this is influenced by the amount of distention of the vessels. The second—viz.—respiratory action, alters the volume through its effect upon the circulatory system; and the third, the cardiac pulsation, is dependent as far as extent goes upon the volume.

Thus, if the cranial contents are in a state of tension the change in the bulk which we have recorded as a pulsation is less than when they are in a less tense, and therefore more mobile condition; for the same reason that the vibrations of a stretched cord are of less extent, the greater the force with which it is extended.

The important factors then in producing cerebral motion, are the alternate aspiration and expulsion of blood by the inspiratory and expiratory motions of the thorax; the greater or less force of the ventricular contraction; the increased or diminished quantity of blood available to be sent to the brain, and the action of gravity upon the cerebro-spinal fluid.

I have to thank Dr M'Ewen for directing my attention to the investigation and putting the patients at my disposal, and to both him and his house surgeon, Mr Borland, I have been indebted for much valuable assistance in the prosecution of the research.

IX.—LYMPHADENOMA, OR HODGKIN'S DISEASE.

By J. AIKMAN, M.D., Surgeon to the St Peter's Port Hospital, Guernsey.

THE disease described under the above-mentioned names is so little known that the carefully preserved record of a very typical case seems to justify me in laying it before the readers of the *Journal* in a more or less systematic form. A desire to incorporate with it some remarks upon another case of the disease, of which I have not notes, is a still further inducement to forsake the bare form of a clinical record.

In the autumn of 1872, a poor woman asked me to advise her as to the treatment of an enlarged gland below the angle of her daughter's jaw. The child was eleven years of age, fairly grown, but white and pasty looking. I accordingly prescribed the mixture of cod liver oil with potassio tartrate of iron (Guy's Hospital Pharmacopœia), and the external use of tincture of iodine. Two years later, my opinion was again asked concerning the advisability of removing the gland by operation. At that time it had very much increased in size, in spite of a persistence for six months in the treatment I had prescribed. Neither Dr Francis Carey nor myself advised operation, and the patient was once more lost sight of. A course of tonics with cod liver oil was recommended, and, I believe, carried out.

On the 9th of November, 1876, the girl again presented herself at the out-patient room of the hospital, complaining of symptoms which her mother supposed were preliminary to the occurrence of menstruation—pain in the back, fulness of the stomach, headache, &c. Having my suspicions aroused by the size of the child's stomach, and the peculiar yellow tinge of the anæmia, I sent her to the female ward for examination, when the following notes were made:—

L. W., æt. 15, a pale anæmic girl, with a large glandular swelling below the left side of the jaw. The swelling consists of a large tumour extending from within an inch of the mesial line to beyond the angle of the jaw, and downwards to the level of the clavicle. Below this and at a lower level are several other enlarged glands. The swelling was

first observed four years ago, since which time it has been progressive, and its progress has been accompanied by a corresponding pallor and yellowing. The mucous membrane of the eyelids is particularly pale, that of the lips less so. The hair, skin and eyes are dark, the eyelids droop and their lashes are long, giving an aspect of languor to the patient. The limbs feel flabby, and the skin hangs loosely upon them, but she does not think she has lost flesh. The conjunctivæ are distinctly jaundiced, the tongue slightly furred, the appetite excellent, the bowels regular, but motions rather light in colour; the urine normal in quantity, but often thick and high coloured. There is a complaint of pain in the abdomen at times, in one or other, hypochondrium. Pulse 120. The rapidity may be accidental, but the character is soft and compressible. The breathing is quiet and regular, and there is no complaint of dyspnœa. Weakness is not complained of, but admitted.

Physical Examination.—No other lymphatic glands were found enlarged. Temp. 98.6° Fahr. The cardiac action, though rapid, is not violent. The apex beat is situated about one inch below and to the left of the nipple. The cardiac dulness measures three inches from above downwards by three and a quarter transversely. Cardiac sounds free from murmur, as also vessels in neck.

The hepatic dulness commences one inch below the right nipple, and extends downwards in that line for six inches. Its least depth is at the hilus, which divides the liver and spleen, where it measures four inches. The liver surface is perfectly smooth and very slightly tender.

The splenic dulness commences at the level of the cardiac apex beat, and extends downwards for $7\frac{1}{2}$ inches. From the hilus, which marks the point at which the splenic and hepatic dulness merge, the splenic tumour sweeps with a crescentic margin to nearly the crest of the ileum. The surface is uneven, but not at all tender to pressure. The girth of the chest at the upper margin of the hepatic dulness is $26\frac{1}{2}$ inches. At the hilus dividing the liver and spleen the abdomen measures 29 inches, and at the umbilicus $29\frac{1}{2}$ inches.

The urine is rather high coloured, slightly acid. Sp. gr., 1015. Contains nothing beyond lithates.

There is no œdema and no purpuric discolouration; neither has there been any epistaxis.

R. Quiniæ disulph., gr. xviii. Acid. sulph. dil.: qs. Aq. ʒvi. ʒss. ter die.

The progress of the glandular enlargement is by no means always so slow as here recorded. In the cases reported by Dr Wilks (Guy's Hospital Reports, Series III., Vols. II. and V.), it is stated that two and three years have been noted, but in the one other case which I have seen it showed itself within ten months of the date of death, and not more than ten weeks before death, the disease in the spleen was discovered.

The family history is interesting. On the paternal side an aunt is an inmate of the lunatic asylum; an uncle died under my care of locomotor ataxy; and several uncles and aunts are phthisical. On the maternal side there is one case of phthisis in an aunt. The father is a tall, well-built man, and enjoys excellent health. The mother is fairly healthy. There are two brothers, both alive, but neither very strong. The elder has been under treatment for cardiac palpitation, and is a nervous, excitable boy.

In the other case there was also a neurotic history, a sister of the patient being insane, and she herself the subject of delusions.

On the 14th of November there was found a bruit de diable over the vessels in the neck, and an anæmic murmur over the base of the heart. At the same date it is noted that the lower third of the splenic tumour is shut off from the upper by a sulcus, and that this lower portion is traceable into the pelvis. This note is accompanied by the question, whether such lower portion may be ovarian. On the 28th of November it is recorded that the splenic tumour is becoming markedly hard as compared with the hepatic.

The note of the 27th of December records the first sign of œdema of the legs, and, curiously enough, the first rise in temperature to 100° Fahr. Emaciation is now beginning to show itself, and the measurements have increased.

One inch below the nipple, $26\frac{3}{4}$ inches.

At the level of the hilus (marked), $29\frac{1}{2}$ inches.

At the umbilicus, $30\frac{1}{2}$ inches.

On the 10th of January, 1877, the patient was put upon phosphorus pills, $\frac{33}{33}$ of pure phosphorus twice a day.

There is little to note concerning the progress of the case until February 17th, when the temperature is marked as averaging 102° Fahr. An attempt was now made to estimate the diurnal variations of temperature, but with little satisfactory result. Variations, it is true, were evident, but they seemed to bear little relation to the time of day, the exacerbations being paroxysmal.

Coincidentally with the increased temperature did the emaciation increase, and the urine became loaded with lithates. The anæmic pallor increased, and the pulse became rapid, feeble and irritable. A sensation of languor was constant, and the sleep heavy and profound. The appetite continues good, and each meal is followed by sleep.

A nodulated and roughened splenic surface is noted, and further attention is called to the increased hardness of the splenic tumour. A slight increase in the measurements, and an examination of the urine with a negative result complete the note.

On the 27th of March a lower average of temperature, but with wider extremes, is remarked upon, and a displacement of the hepatic tumour by the increased size of the splenic, which latter has become still more uneven and nodulated. The œdema of the legs is excessive, and much pain arises from the distension. There is no other complaint of pain.

On the 24th of April the first note is made of the existence of fluid in the peritoneal cavity. It is not sufficient in amount to distend the abdomen, but floods the viscera, and gives a very distinct sense of fluctuation through the abdominal walls. The languor is so great that the patient has to be carried about. Measurements in the situations before mentioned, $29\frac{1}{2}$ inches, $33\frac{1}{2}$ inches, $33\frac{3}{4}$ inches. Pulse, 136. Temp. 101.8° to 102.5° Fahr.

The notes which carry the history of the case forward to

the 31st of May record the occurrence of a class of symptoms which alternated up to the date of the child's death. Firstly there occurred diarrhoea, never very severe, but frequent and exhausting. Succeeding the diarrhoea came attacks of faintness, sometimes to the extent of actual syncope; and lastly, paroxysmal attacks of dyspnoea, which nothing seemed to relieve. The temperature sometimes reached 103° Fahr., and averaged 102° Fahr., but the pulse fell in rapidity, often not giving more than 110 beats to the minute. This decrease in pulse rate was very remarkable. On the 15th of May, the figure recorded is 140; between that date and the 22nd, the figures range from 116 to 124; and on the 31st, 100 to 116. The emaciation was now excessive, and the exhaustion too great to permit her to answer questions save by a word or two.

During the first week in June, pains in the splenic tumour began to destroy her sleep; and to relieve them, 8 minim doses of Squire's solution of the bimeconate of morphia were given at bedtime. This draught had a most happy effect. She slept well; her appetite improved; she regained, for a time, her voice; her fits of syncope became less numerous and less complete, and even her dyspnoea improved under its use. But with general oedema, bed sores, and constant fever, little improvement could be expected. Her short period of comparative comfort came to a close with three slight convulsions on the 20th of June, which immediately preceded her death.

The *post mortem* examination of the body was made 24 hours later.

After removing the serous fluid which filled the peritoneal cavity, the spleen and liver came partly into view, having been in great part carried beneath the margin of the ribs by the pressure of the effused fluid.

The *Spleen* was represented by a triangular mass, the base of which rested upon the diaphragm, while the apex was directed towards the pelvis. It is difficult to estimate the measurements of the tumour, because the lower third was semi-detached by a deep sulcus, already described as at first

felt in the neighbourhood of the iliac fossa. Besides this, to the lower extremity were attached several pendants of spleen tissue, which might in health have been spleniculi, but varied in size from that of a pigeon's to that of a bantam's egg. Probably its extreme length was from ten to twelve inches. It weighed fully 3 lbs. The surface of the mass was of a deep purple colour, studded and mottled with yellow. It was hard and nodulated to the touch, and in one or two places the nodules were umbilicated like the Farres tubercles of a cancerous liver. On section, the surface was more firm than that of a healthy liver, and equally dry. It is impossible to describe the appearance of the section better than it has been described by Dr Wilks, "as though the splenic spaces had been injected with tallow, and the injection allowed to cool." In no single spot of the morbid material could any trace of softening be found, though some of the deposited matter was sufficiently aggregated to equal on its section the size of a halfpenny. No part of the tumor was free from deposit, and in no part did it show any tendency to invade or infiltrate the tissue; it simply displaced it, as an injection might have done.

The Liver, which had been pressed up almost completely under the cover of the ribs, was also found to be of large size, though natural in appearance and on section. It measured 6 inches in depth, was 9 inches broad, and weighed nearly 3 lbs.

The gall bladder was fairly full.

The Kidneys were found to be still lobulated, and the left one bent upon its long axis, apparently by the pressure of the splenic tumour. The relative amount of the cortical substance was decreased, but otherwise the section was normal.

The Heart was healthy in all respects.

The Lung small and cedematous, but contained no tubercle nor other sign of morbid change.

No enlargement was noticed in any lymphatic glands, save those in the neck.

The cellular tissue in all parts was cedematous.

In point of treatment, nothing seemed to do good. The quinine mixture, gradually increased in dose, was continued

till the end of May. Phosphorus pills were commenced on the 10th of January and continued until 8 dozen had been taken, but without any effect either for good or evil. Sulphuric and chloric ether, bromide of potash, chloral, and lastly, bimeconate of morphia were used at various times to relieve the dyspnœa, but the morphia alone did good. The diarrhœa yielded readily to bicarbonate of soda and rhubarb in mixture.

Sir William Jenner, in charging the members of the Clinical Society of London previous to their recent discussion on the subject of Lymphadenoma, asked for as many facts as the disputants could bring, and as few theories as their minds would permit them. Without any desire to transgress this judicious limitation, I may be permitted a word or two concerning the scanty literature of the subject, criticised from the facts of my own case.

The progress of the case herein described varies in no particular from the systematic description, save that only the glands in the neck were enlarged, while in other cases there was usually also enlargement of some other glands in the axilla, groin, or mediastinum. In its nature the disease has been compared on the one hand to cancer, and on the other to tubercle. I can see nothing in the *post mortem* appearances to justify either view. One case of malignant disease of the spleen was admitted under Dr Perry's care in the Glasgow Royal Infirmary on the 20th of November, 1868, and my notes on that case tell me that besides the inflation of the organ, the surface of the stomach, transverse colon, omentum, and pancreas were covered with grape-like clusters of deposit. On the other hand, in the present case, not only was there no deposit in the neighbourhood, but the left kidney was pressed out of shape, without in any way sharing in the disease of the organ which displaced it. In the organ itself the deposit was shut off from the healthy tissue by a clear line of demarcation—a fact utterly at variance with every description of cancerous disease with which I am acquainted. Nor does the etiology seem more clear from the supposition of tubercle. It is hard to conceive that a tubercular deposit

could have grown to the size of a walnut, its period of growth extending over at least seven months, and shewn no sign either of softening or calcification. It is true that large masses of tubercle are sometimes to be found in tubercular meningitis, which show little or no sign of softening, but that is a disease of weeks and not of months. Further, it is difficult to understand why a tubercular deposit should choose the spleen and entirely pass over its usual seats of selection. The extent of the deposit would not explain the fact, for it is not the case that the occurrence of tubercle in large amount in the lung will save the intestines, but rather the reverse, that a rapid deposition in one organ is in direct proportion to its amount, endanger others. I can find no suggestion to the effect that the continued and extensive enlargement of the lymphatic glands may in time affect the functions of the spleen. That the spleen has much to do with perfecting the products of the lymphatic glands is, I think, physiologically true, and it would require but little imagination to conceive that diseased glands might in time load the spleen with material which was not capable of being wrought up into healthy blood corpuscle. There is one reservation in such speculation, and it hangs upon the question whether the indurated glands are permeable by lymphatic vessels? I have no information which can guide me to the answer. Upon the microscopic appearances of the liver and spleen I offer no remark; but I propose to submit the specimens to a more experienced hand, from which I hope to receive an interesting supplement to this paper.

Should the reader desire, he will find all the information concerning this rather rare and remarkable disease in the Guy's Hospital Reports, previously mentioned; in the *Lancet* for December 2nd and 16th, 1876 (Discussion in the Clinical Society), and in Dr Wilk's paper in the Guy's Hospital Report for 1877.

NOTE BY DR DAVID FOULIS.

Samples of the tissues of the spleen and liver were sent to me by Dr Aikman, and after perusal of his notes on the

case, I proceeded to examine the tissues microscopically. The pieces sent to me had been hardened in chromic acid, which obscured the distinctions of colour in the case of the spleen referred to above. But when, after soaking in alcohol and then in pure water, sections of the tissues were made by the freezing microtome, it became evident that the tissue of the spleen was thickly set with nodules, which seemed to push aside the normal spleen structure. Examined with a hand-lens the sections appeared to be chiefly composed of the new tissue. The normal spleen texture was in scattered masses and particles of a yellowish tint, separated by the pale or white and translucent glistening new growth in an irregular manner. The new growth had a striated aspect, and while generally transparent, it was dotted over with a white and more opaque tissue. Under the microscope the structure of the new tissue was found to be as follows:—*First.* There was a basis of fibrous tissue, composed of extremely delicate, wavy, connective tissue, which accounted for the glistening aspect of the sections. *Second.* There were small round cells and free nuclei set in the oblong meshes of the fibrous tissue. *Third.* There were triangular, oval, and spindle cells, which were in parts in great abundance, and which seemed to be a transition stage between the round cells and the fibrous tissue. It was noticeable that the fibrous basis was not arranged in an irregular interlacing network, but rather in dense lines and layers, which opened out here and there to allow room for the groups of cells.

At the point of contact of the true spleen tissue with this new growth there was a narrow zone where the two seemed to intermingle. Beyond this zone the tissues were unmixed—the new growth being quite different in structure from the normal spleen tissue.

The liver tissue, so far as I could judge from the specimen sent to me, was not diseased.

An interesting point suggests itself as to the origin of this pale new tissue in the spleen. The growth was too far advanced in the case in question to allow of a definite con-

clusion being drawn from the examination of the specimens ; but the very diffused and thoroughly infiltrating nature of the growth, seemed to point to the blood-vessels as the probable seat of the first growth.

This brings to my mind a case in some respects similar to that brought forward by Dr Aikman, which I may be allowed to quote, as in it the examination of the liver seemed to throw some light on the origin of such new masses.

The patient was a female domestic, aged twenty-six years, who succumbed to symptoms of an obscure abdominal character, accompanied with great emaciation, and some dropsy of the legs.

On *post-mortem* examination the peritoneal cavity was found to contain several pints of a clear fluid, in which floated a flake or two of fibrin. A pint of rather purulent fluid lay in the left pleural sac ; and a little fluid of a clearer kind in the right pleura.

The heart was the smallest one which I have yet seen in an adult, its weight being $4\frac{3}{4}$ ounces only. Its structure, however, was well proportioned, and the tissue firm,

The left lung was compressed by the effusion in the pleura, and weighed $8\frac{3}{4}$ ounces ; the right lung was somewhat œdematous, and weighed $12\frac{1}{2}$ ounces. No tubercles existed in either lung or pleura.

On the posterior wall of the stomach were several irregular, raised, sloughing patches, the largest being of the size of a farthing, and of oval shape. In one of these the thickness of the wall of the stomach at the edge of the ulcer exceeded one-fourth of an inch. The duodenum was much ulcerated, and its wall thickened. At one part near the pylorus the bowel was invested by a mass of enlarged and œdematous glandular tissue which was in some places softened and yellow, and in other places grey and glistening, as if from œdema.

In the duodenum and upper part of ileum were one or two small ulcers on the peritoneum, over which were small groups of miliary tubercles: no ulcers extended lower down. The mesentery was dotted over with what seemed to be large

tubercles, of a grey, shining aspect (quite distinct from enlarged mesenteric glands). The pylorus was not diseased.

The liver was rather small, weighing 2 pounds 2 ounces, and its tissue was thickly set with small, dark-red, soft, rounded masses, the largest of which would be of the size of a green pea, and the smallest a mere speck, scarcely visible to the eye. The gall bladder was distended with pale bile, its duct being rather pressed in by the mass of enlarged glands.

The spleen was normal, 4 ounces weight: kidneys weighed together 7 ounces, and were slightly fatty: brain 44 ounces, tissue pale; some œdema of membranes; no tubercles.

The nodules in the liver were subjected to a minute examination with the microscope. They were found to be composed of lymphoid tissue—a loose, delicate stroma with abundant round nucleated lymph cells. The dark red colour was due to hæmorrhage into these nodules, as was distinctly evidenced in the case of one or two of them, in which the remains of a blood-vessel could be traced right across the centre of the nodule. The lymphoid growth could in these cases be followed along the blood vessel beyond the nodule, and there could be no doubt that it was a new growth in the sheath of the vessel. The name lymphadenoma was therefore not out of place, as applied to these nodules in the liver. The nodules were not encapsuled, but neither, on the other hand, did they infiltrate the surrounding liver tissue; in this respect, as well as in their small size, differing from the pale masses in the spleen in Dr Aikman's case.

Possibly the different arrangement of the vessels in the spleen from that in the liver may account for these points of difference in the new growth. I merely throw out the suggestion that the origin of the growth may be the same in the two cases, namely, the sheaths of the blood-vessels.

Reviews.

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I.—THE TREATMENT OF SPINA BIFIDA BY A NEW METHOD. *By* JAMES MORTON, M.D., *Professor of Materia Medica, Anderson's University.* Glasgow: James Maclehose. 1877.

THE great value of monographs, and especially of such as give the details of original cases, is acknowledged by every one. In such works, every aspect of a disease is presented to us for study, its natural history and progress, its accidents and complications are shown in their true relations, and to them the practitioner, when bothered by anomalous symptoms or untoward events, almost instinctively turns for help and enlightenment. This, however, is not the character of Dr Morton's little book. Its intention is different, and is merely to show what results have been attained by the use of his iodo-glycerine solution in the treatment of cases of spina bifida. Such a limiting of the scope of the book we think somewhat unfortunate, for there can be no doubt but that Dr Morton, with his large experience, could have very materially increased our knowledge both of the pathology and semiology of the disease. While, however, we are bound to respect to a certain extent the author's intention, we cannot help thinking that there are certain questions to which he does not at all make reference, but which, even from his own point of view, press for a solution. Thus he confesses, like most other surgeons, that there are certain cases which cannot be benefited by treatment even with his iodo-glycerine solution. As to these he merely says that they are badly nourished, unhealthy children, or are suffering from hydrocephalus in addition to spina bifida, or that the spinal defect is associated with paralysis of the lower limbs. In the first two sets of cases it is easy to see why no treatment whatever may be of any use, but as to the third class, while it might *à priori* be expected to be as little amenable to treatment as the others, yet as a clinical fact, certain cases of paraplegia do completely recover after injection. As to the cause of the paralysis it is manifestly due either to pressure or to some more deeply seated lesion directly dependent on the original cause of the disease. It is known that among other conditions the tumour may be a mere protrusion of the spinal membranes containing cerebro-spinal fluid, or it may be a localised dropsical distension of inflammatory origin,

situated in the arachnoid cavity, the sub-arachnoid space, or even in a dilated portion of the central canal of the cord itself. Hence the importance of determining in any given case, *if possible*, the nature of the sac and its contents, and especially, whether the fluid contains sugar and is subarachnoid, or only albumen and derived from the cavity of the arachnoid. The vague way in which this question is treated by Dr Morton may be seen from the following sentences: "It is in reality a local dropsy consisting of a collection of serum within the serous coverings of the spinal cord; and, too often for the safety of the patient, there is also a portion of the nerve structure of the cord, which has left its proper line and lies extended under the serous lining of the sac, just under the skin, running as it were round or half-round the circumference of the swelling which is often globular as in this instance," (p. 21): and, "the presence of the cord and the free communication with the serous covering of the spine and brain are the chief obstacles to success" (p. 23). Notwithstanding, he does not hesitate to inject his fluid into all cases, no matter what cavity presents nor what may be the relation of the cord to its interior, and he claims 70 per cent. of cures. That parts of the spinal cord or nerves are present in the sac in the great majority of cases, is a statement made by most surgeons. Dr Morton, while he ingenuously confesses (p. 58), "I am not aware upon what evidence this statement rests," goes on to say in reference to his first series of successful cases:—"To assume the absence of the cord or parts of it, in seven consecutive cases, is so entirely beyond the range of probability as to be altogether inadmissible, while possibly it was present in all." To this we entirely demur. The statement above referred to rests, so far as we have been able to determine, on the result of *post-mortem* examinations. P. Hewett* for instance found only one out of twenty specimens examined, in which parts of the cord or nerves were not connected with the sac. But it is futile to argue from unsuccessful cases and museum specimens to successful cases and healthy vigorous children. We know too well the effects of pressure on nerve tissue to believe that the presence of inflammation, exudation, and organization of lymph which, according to Dr Morton, complete the cure, can go on around the cord, or even important nerves, without causing not only temporary derangement of function but also permanent mischief. What, then, are we to make of Dr Morton's splendid results? Simply this, that

* Med. Gazette, vol. XXXIV., p. 461.

those cases of *spina bifida* in which the cord or nerves do not pass through the sac, and which have hitherto been considered, on what appears to us insufficient evidence, as the rarer forms of the affection, are really more common than is generally supposed. With a wider experience in the future, and especially with a more complete and exact anatomical investigation of each case, successful and unsuccessful, we venture to submit that Dr Morton will find this to be a fairer inference and a truer explanation of his success. It will also explain the numerous recorded cases where success has been attained by such rude means as excision and removal by the *ecraseur* or ligature. Meanwhile, we can only congratulate Dr Morton on his long list of successes, and if imitation be sincerest flattery, we gladly beg of him to accept by anticipation our flattery.

We are sorry to notice so many "printer's errors" in the book, especially in the prescriptions, where English and Latin, nominatives and genitives, jostle each other most uncomfortably. Might we also ask if it was that same mischievous individual, the printer, who caused the omission of quotation-marks from the first five pages? Most readers will at once institute a comparison between them and Holmes' System, vol. V., pp. 804-5, which will not be altogether favourable to our author. It is not necessary to make here particular reference to the drawings by which the book is illustrated.

II.—DISEASES OF THE KIDNEY AND URINARY DERANGEMENTS. Part II.—*ALBUMINURIA.* By W. HOWSHIP DICKINSON, M.D. London: Longmans, Green, and Co. 1877.

THIS book is issued in two forms: under the one form it constitutes the second part of a more general work, as stated above; under the other form it appears as the second edition of the author's former work on "*Albuminuria*." Remembering the clear view which Dr Dickinson presented of his subject in his first edition,—a view admirably worked out, both from the clinical and pathological side—we have looked forward with considerable interest to the appearance of this revised edition, to see how the controversies on renal pathology, which have arisen of late, would be dealt with, and with the hope of finding that 14 years' additional experience would improve and consolidate the book. We are glad to say this hope has been realised, and we may

say at once that we consider this volume on "Albuminuria" to be the best treatise on this subject with which we are acquainted.

The author has not departed from the classification formerly adopted—he still recognises three great varieties of such affections: tubal nephritis, intertubular nephritis, and lardaceous disease of the kidney. Dr Dickinson wisely, we think, departs from the name which he had formerly adopted for this last variety; the name used—"depurative"—was introduced to indicate the close connection existing between this form of disease and the process of suppuration which usually leads up to it; but it was too theoretical a title to claim ready assent, especially as certain cases were well known to occur in connection with syphilis, apart from any recognisable suppuration, as well as in the course of certain cases of pulmonary phthisis which had not been characterised by any profuse discharge of pus. Dr Dickinson defers to the authority of the Committee of the Pathological Society in adopting the name "lardaceous"; and, although many still prefer to adhere to the terms "amyloid," or "waxy," it would no doubt be better, especially for our students, if one name could be agreed on and adhered to by all. In Scotland, among the older workers at this subject, the name "waxy" is still held in favour; and although it is now universally admitted to be based on a fallacy, the term "amyloid" seems to continue to be the one most widely used for this form of disease. We agree with the author, however, in thinking that some deference should be shown to the recommendation of the Pathological Society.

Dr Dickinson, as we have said, classifies "Albuminuria" as due to "tubal nephritis," "granular degeneration," and "lardaceous disease." This classification has now gained the favour of clinical as well as pathological observers. All of these forms can often be diagnosed with great certainty; and, indeed, when the cases are uncomplicated, and the histories tolerably satisfactory, there is not usually much difficulty. But in many cases the different forms are mixed up, the one with the other, and, as the author shows, this complication arises, not in an accidental way, but in direct connection with the morbid process itself. Dr Dickinson brings forward very clear proof that those cases of tubal nephritis which last long usually become complicated with intertubular fibrous change (granular degeneration), and that the occurrence of this complication introduces a grave difficulty as regards recovery. Lardaceous disease, likewise,

from the very presence of the abnormal deposit setting up irritation, is apt to be associated with more or less tubal nephritis. In this way we often have to deal with complex conditions, which render the diagnosis difficult or impossible.

The author has some valuable contributions to make to the discussion of the Arterio-Capillary Fibrosis controversy, and regarding the connection of cardio-vascular changes with renal disease. He holds that whenever there is marked granular degeneration of the kidneys, there is usually present some degree of those changes in the arteries which are allied to those occurring in connection with the degenerations of advancing years; indeed, he holds that such changes in the vessels, and the hypertrophy of the heart associated with them, may be regarded as indicating in "Albuminuria" the presence of this intertubular fibrous change (granular degeneration). But various cases of renal disease occurring in children, clearly traceable to tubal nephritis as a starting point, and dating perhaps from a definite attack of scarlet fever, have been found to present this fibrous change in the kidneys to a most marked degree, and to be associated with all the train of cardio-vascular changes referred to. In such patients, therefore, we may fairly presume that the renal disease was in some way the cause of the general arterio-capillary fibrosis, and so these fibrous changes in the kidney and in the systemic vessels could not be set down to a general degeneration allied to senile decay of the tissues. Of course, the author does not contend for the origin of all cases of intertubular change in connection with old tubal nephritis: he recognises two classes of granular degeneration, and he admits the relatively greater frequency of the primary form of the granular degeneration about the age of 40 or 50, but this does not lessen the cogency of his argument drawn from childhood, which we regard as extremely strong.

This leads to the question of the state of the arteries in Bright's disease, and to the cause of the hypertrophy of the left ventricle of the heart so commonly observed in this affection. Dr Dickinson admits hypertrophy of the muscular coat of the minute arteries as being of very frequent or almost of constant occurrence in cases of long standing albuminuria. He thus agrees, so far, with Dr Johnson. But he likewise admits the existence, in certain cases of this kind, of a degree of thickening of the fibrous coat also, sometimes existing along with the hypertrophy of the muscular coat, and apparently in proportion to it, but sometimes in relative excess of, or even apart from, any obvious hypertrophy of the muscular coat.

He thus believes, to a certain extent, in the reality of the "hyaline fibroid" of Drs Gull and Sutton, and he does not regard it as a product of microscopic manipulation. Thus far we think he is on safe ground. We cannot, however, say as much for his explanation of this muscular hypertrophy of the arteries. He seems to revert to the old physiology which regarded the minute arteries as active agents in promoting the circulation of the blood; and so far from looking on the hypertrophied coat, with Dr Johnson, as presenting an obstruction which the left ventricle, by its hypertrophy, endeavours to overcome, he regards this increase of the muscular structure of the minute arteries as an efficient aid to the force of the hypertrophied ventricle—the resistance to the passage of an impure blood being supposed to reside in the capillary system. He says:—

"Given the capillary resistance, the whole problem clears. The heart and the arteries, whose common functions it is jointly or alternately to carry on the blood, become habitually distended, are stimulated by distension to over-action, and by over-action to hypertrophy. As both heart and arteries are exposed to the same causes, both are affected in the same manner and at the same time. But in addition to the hypertrophic action, the blood-pressure upon the interior of the arterial system, and possibly also the irritant effect of the contaminated blood produce alterations of a degenerative or sub-inflammatory kind. Congestion, or increased blood-pressure, causes fibrosis in vessel-walls as elsewhere. And the degenerative process is abundantly witnessed by the state of the muscular nuclei and of the inner layer of the muscular coat." Page 561.

In the previous page he says, "There is reason to believe that the heart would be quite inadequate to force the blood through the systemic vessels without help on their part: and indeed the only feasible view of the mechanism of circulation is that the wave of blood which arises in the ventricle is helped on by an advancing zone of arterial contraction, which follows swiftly in its rear, and by a sort of vermicular action continues the ventricular impulse as far as arterial muscles extends."

Dr Dickinson would require to adduce some clear proof of the assistance which such hypertrophy in the arterial coats can afford to the circulation, before we accept this doctrine, which appears to us to be as unsatisfactory as Dr Johnson's "stop-cock" theory.

Among the chapters in this work, which will interest

special groups of readers, we may mention these on the retinal changes common to albuminuria, on alcohol as a cause of renal disease, and on climate in relation to renal disease.

As regards etiology we may point out that in mentioning smallpox as an occasional starting point of Bright's disease, the author seems to have overlooked the valuable contribution to this subject which appeared in our pages from Dr Samson Gemmell in 1874—(Vol. VI., p. 433)—the only contribution bearing on this question of any importance published in this country, so far as we are aware.

Amongst occasional causes of this affection, Dr Dickinson mentions rheumatism, and he details an interesting case in illustration of this connection, although he seems to regard this cause as very rare (p. 297); we are inclined, however, to believe that in not a few cases of Bright's disease, the connection of rheumatism with this affection is more than accidental, and the acknowledged influence of gout in this respect would seem to render this the more probable; of course, in speaking of rheumatism as being thus a possible cause of certain forms of chronic renal disease, we do not refer to those due to embolic lesions. To us in Scotland, indeed, two causes which seem to bulk largely in Dr Dickinson's view, gout and lead poisoning, are almost unknown in hospital practice as leading to Bright's disease, so that it is perhaps natural that we should look about for other causes of chronic albuminuria.

The plans of treatment sketched out for the different forms of this serious malady seem to us very satisfactory. The author lays much stress on the use of diluents in acute tubal nephritis, and he especially extolls distilled water; but purgatives, diuretics, and diaphoretics—including the hot air and vapour bath—are all mentioned, and their proper use indicated. As regards lardaceous disease, Dr Dickinson seems to us to have less faith in his treatment by alkalies than he had at one time, although he still recommends their careful use, and in connection with this form of the disease, we may say that the author narrates some cases where the recoveries were most remarkable, so that even this seemingly hopeless form of the disorder should not be too readily despaired of.

In conclusion, we may add that there are several coloured illustrations in this volume, as well as numerous woodcuts, which add materially to the value of the work.

III.—THE WEST-RIDING LUNATIC ASYLUM MEDICAL REPORTS. *Edited by J. CRICHTON BROWNE, M.D., F.R.S.E., and HERBERT C. MAJOR, M.D.*
Vol. VI. London. 1876.

As usual, the most able and interesting paper in these reports is that by Dr Hughlings Jackson, and we may say, that although somewhat hard reading, there is hardly a paragraph or sentence in this rather long paper which is not full of meaning and interest. The subject is "Epilepsies and the After-Effects of Epileptic Discharges." In a foot-note to the title of the paper he fully acknowledges that he has been anticipated in the explanation he suggested as to the cause of the temporary paralysis which may follow strong epileptic discharges. Dr Alexander Robertson, of this city, had previously written as follows:—"I am inclined to think that the late Dr Todd was correct in supposing that severe and protracted convulsions may themselves be causative of palsy of a few hours' or days' duration, through simply the exhausting influence exerted on the cells of the central ganglia without much, if any, appreciable change of tissue. This explanation is especially applicable to some cases of hemiplegia following epilepsy, in which the paralysis passes away in a few days." Having thus put himself right as to priority, and having called this theory of post-epileptic paralysis, "Todd and Robertson's hypothesis," he proceeds, in his own digressive style, to elaborate his views, and these views have a very great physiological as well as pathological value.

It is impossible to give anything like a true and adequate resumé of the paper, but we may be able to put in a more concrete, and possibly more easily appreciated form, what seem to us the general results of the facts and speculations given here. In the first place we may say, that in order to understand the author's position it is necessary to remember the view he holds as to the construction of the nervous system. This view has its most thorough exposition in Herbert Spencer's *Principles of Psychology*, and we endeavoured, some years ago, to give a sketch of it when reviewing that work along with some others (see this *Journal* for 1874, p. 101.) Let it be remembered that, according to this view, the various lower and higher centres are not simply built one upon the other—the higher ruling the lower—but that the higher represents the lower in a higher degree of complexity. If the lower centre represents, let us say, a particular part of the body in certain of its simpler movements, the higher represents that part of the body in movements of far greater complexity and speciality.

To take a concrete instance. The corpus striatum, as a whole, represents the movements of every part of the body—arms, legs, head, face, eyes, and trunk. But it represents movements of these parts in a comparatively simple form. The movements of the various parts of the body are again represented in the convolutions, in the region of Hitzig and Ferrier. Here the movements are much more complex, and the centres are more highly organised. It is not that these centres rule the lower ones in the corpus striatum, but that they, being of considerably larger bulk than the latter, are an elaboration, a higher evolution, out of the corpus striatum. But there are motor centres which are above those of Hitzig and Ferrier, and which are a still higher evolution, and form the substrata of consciousness. These centres have the highest degree of complexity, and the most wide-spread relations with all parts of the body.

But there is a further stage in this view, which is reached in the present paper, and which we do not remember to have seen in any other work of the author; it is a development, however, which as we shall see, is of great moment in relation to symptoms. It is contended in the first place, that each unit of the corpus striatum is in relation with, or may represent all the muscles of the opposite side of the body. Each unit of the corpus striatum will be a nervous arrangement, by which some one particular action will be carried out—let us say, that one such unit has for its particular function the act of bringing the right leg forward, as in the act of walking. It is obvious that though in this act certain muscles of the right leg are chiefly concerned, yet that there is hardly any part of the body in which there is not some subordinate muscular movement. The nervous arrangement in the corpus striatum therefore, while representing chiefly certain muscles in the right leg, will represent, to a slight extent, muscles in every part of the body, and it will be clear that in this and most other muscular acts, the muscles of the trunk and head will be more homogeneously engaged than those of the limbs, eyes, and face. But in the act which we have been considering there will be movement of muscles not only on the one side of the body, but also on the other side; the movements on the second side being of course much fewer than those on the first. And so the supposed unit of the left corpus striatum, which represents the act of bringing the right foot forward, will be in relation with muscles on both sides of the body. We may bring here into service a pathological observation, which may be regarded as in a general way confirmatory of this view. When the corpus striatum is

injured or destroyed by hæmorrhage or softening, there occurs in the spinal cord a secondary degeneration of certain parts of the white substance. It is to be presumed that the nerve fibres, which here undergo degeneration, are those which were in communication with the corpus striatum, and this descending sclerosis, as it is commonly called (we observe that Hughlings Jackson calls it "descending wasting"), though it occurs chiefly on the side of the cord opposite to that in which the lesion exists (the motor fibres decussate in the pyramids) yet there is also some sclerosis on the same side as the lesion. This seems to indicate that the corpus striatum as a whole, and in its individual parts, though chiefly related to the muscles of the opposite side of the body, is also in connection with those on the same side. It should be noted that the descending sclerosis affects different strands of white fibres in the two sides of the cord—the lateral columns on the side opposite to the lesion, and the anterior columns on the same side.

But let us go a step higher, and take what we may suppose to be one of the actions dominated by the motor region of the convolutions, the region of Hitzig and Ferrier. It appears that there is a certain part of this region which has special relations to the arm and hand of the opposite side, but besides these special relations it must have very wide general relations with all parts of the body. Take the action of bowling at cricket, or pulling an oar with one hand. In these the right arm is specially engaged, but those who have practised these actions know that there is hardly a muscle of the body which is not used in them. And it must be remembered that in order to bring about such an action it must be, as a whole, represented in some nervous centre. This elaborate and complex series of muscular movements cannot be brought about in a haphazard way, but there must be a nervous arrangement in which everything is represented, and everything represented in due order and subordination. It will be seen that, as a general rule, the more voluntary and complex an action is, the wider are the relations to different parts of the body which are implied, or at least, that the more voluntary an action is, the more is it necessary that other parts of the body should be accounted for. It is to be remembered also that in the same proportion as the motor connections become complex when we pass from lower to higher centres, so do the sensory connections. Compare the amount of sensory impressions received through the visual apparatus, and made use of by the cricket bowler in throwing his ball, with the amount of sensory impressions received in the act of bringing forward the foot in walking.

We have ventured to put what we understand to be Hughlings Jackson's views into a concrete form in these two illustrations, but it is to be understood that these illustrations are our own, and that we alone are accountable if they communicate any false impression of our author's speculations.

It will now be clear that when we come to motor centres which are still higher than those in Hitzig and Ferrier's region, these centres will be related to the body in a more general way than any of those hitherto considered. All parts of the body will be represented there, and there will be much less special representation. If we again venture to be more concrete than our author allows himself to be, we would recall the very extraordinary connection of the highest actions of the brain with the condition of the blood-vessels and the viscera; how certain thoughts cause the blood-vessels of the face to relax, and scarcely any vigorous exercise of the mind occurs without the rapidity or strength of the pulsations of the heart being affected. These highest centres, which are the substratum of consciousness, have relations not only with the entire voluntary muscles of the body, but with all the tissues and viscera, and the sensory connections will be of co-ordinate complexity.

The application of these views to the study of epilepsy will, we trust, be easy to follow. When the highest motor centres are the seat of the discharge, then as these are the immediate substrata of consciousness, consciousness will be immediately or very soon lost. But we have seen that these highest centres are in relation to all parts of the body, and much less specially to any one particular part than lower centres. If the discharge of these high centres be sufficiently strong to produce muscular movements, then there will be general movements of all parts of the body, not specially of one part, and these may be accompanied by motion of the organic muscular system, producing pallor of the face, excessive secretion of saliva, emission of urine, defæcation. It need hardly be said that, as a matter of fact, convulsions beginning with unconsciousness are nearly always general convulsions. But it is to be presumed that even these highest centres will have more special connections with the opposite side of the body than with their own side, and so it is usual to find that one side is more violently convulsed than another, at least at the beginning of the attack. "The bilateral convulsion, in cases beginning with loss of consciousness, commonly begins by turning of the eyes and head to one side, and the universal convulsion usually predominates on one side." It is clear

that to produce these general convulsions there must be a violent discharge of the centres concerned, and a less violent discharge even of the same centres may not produce convulsions at all. A curious relationship of these highest centres to the periphery of the body is sometimes shown in the *petit mal*. In the *petit mal* there is less of consciousness, with very little if any outward manifestation. But occasionally there is an outward manifestation in the form of sudden pallor of the face, or an excessive flow of saliva. The meaning of this seems to be that the very high centres concerned represent, among others, the vessels of the face or the secretory arrangements of the salivary glands, and the slight discharge of these centres affects these peripheral parts in the way described.

Contrast with this, the condition which will be developed when a lower centre is discharged, one of the units of the corpus striatum for example. There will here be, in the first place, a spasm of perhaps one limb, and the spasm will probably spread to the different muscles of the body which are represented in the centre discharged—the muscles most largely represented retaining, to a certain extent, the preponderance.

It will be seen from this that if these principles be correct, epilepsies in which the fit begins with sudden loss of consciousness with general convulsions, have the seat of the discharging centres in the convolutions, and in those convolutions which contain the most highly evolved centres. These comprise the cases which are commonly described as the typical epilepsies, and it will be apparent that our author's views as to the seat of the lesion, are very different from those commonly accepted. On the other hand, epilepsies beginning with spasm of some particular part, and not involving consciousness at all, or only late on, have the seat of the discharging lesion in the corpus striatum, or the convolutions of Hitzig and Ferrier, which latter are intermediate, in point of evolution, between the corpus striatum and the highest centres. In what are often called the true epilepsies, that is, in those beginning with loss of consciousness, there is, as a rule, no aura, because consciousness is too suddenly lost, and it is epilepsies of this kind that are mostly seen in asylums, where it is uncommon to meet with a case where there is a distinct aura.

The effect of violent discharge of a centre is exhaustion of it, and complete or partial paralysis of its function; and according to the nature of the function will be the kind of paralysis. If a convulsion begins unilaterally there is often hemiplegia after the fit is over—a post-epileptic hemiplegia.

From what has been said, the parts discharged in such cases would probably be the corpus striatum, or the convolutions of Hitzig and Ferrier. The paralysis will occur in the muscles which were first and most strongly convulsed, and if the convulsion has been very severe the paralysis may even affect almost the whole of one side. It is even probable that cases will occur in which the paralysis will go beyond hemiplegia—will pass to the other side of the body. If the convulsion has passed to the second side, and has been sufficiently severe there, then there may be a partial paralysis of this second side, but it will be very slight and transient, and will probably escape notice. When the highest centres have been strongly discharged, there follows on the general convulsions, severe physical prostration, and there is, at the same time, loss of consciousness; and these two conditions of physical prostration and loss of consciousness may even amount to coma—a post-epileptic coma. The loss of consciousness during the convulsion is, of course, to be distinguished from that following it. Similarly we have post-epileptic aphasia, in which discharge of the convolutions which supply the substrata for words, has led to the exhaustion of these centres. In all that is here said, no account is taken of another set of phenomena which may be the consequence of exhaustion of a centre from an epileptic discharge: we refer to the automatic actions which are occasionally seen. It will be remembered that our author's explanation of these phenomena is, that the discharge of the high centre exhausts it, and leaves lower centres to act out of the control of the higher. This subject, however, does not fall to be considered here, but we shall return upon it in relation to an interesting case of epilepsy recorded in the volume before us.

In all that has hitherto been said, motor phenomena have been almost exclusively considered, and epilepsy has been viewed as due to the discharge of motor centres. But there are sensory centres as well as motor, and we should expect to find phenomena occurring from their discharge as well as that of the motor. The discharge of sensory centres will produce such phenomena as a feeling of numbness, "balls of fire," &c. The author regards migraine as an epilepsy in which centres, chiefly sensory, are discharged. It will be very difficult to distinguish any post-epileptic paralysis of sensation in these cases of discharge of sensory centres. Some attempt may be made in cases where the epilepsy begins with the development of an impression of some particular colour, and where after the discharge is over there

may be a temporary loss of the power of appreciating this colour, while the complimentary colour is abnormally prominent.

Before leaving the subject of epilepsy we have to refer to a case recorded in this volume, which is very well worth perusal as a most interesting but probably rather unusual case. The peculiarity of it seems to be that the epileptic discharges occurred in sets of three or six, and that after these sets were over, there occurred certain automatic phenomena also in sets of three or six according to the previous convulsions. Taking the description of the attacks at one period it seems that preceding the fit there was restlessness, vacancy, peculiarity of manner, lasting about three minutes. The fit proper then began with working of both eyes, twitchings of both angles of mouth, working of both arms and legs. Then there was spasm of the muscles on both sides of the body with a scream. Afterwards clonic spasm again, followed by relaxation of the muscles, the fit being over. These phenomena were repeated in threes or sixes, and the close of the last was manifested by closing the eyes, which, throughout the attack, had been kept open. For about three or four minutes she now remained as if in sleep, and then the following phenomena occurred:—The eyes opened suddenly, staring fixedly into vacancy, and then there was a frightful struggle (the patient all the while unconscious) lasting about $\frac{1}{4}$ or $\frac{1}{2}$ a minute—and this repeated three or six times, in accordance with the number of the preceding fits. During this struggle she was frequently most destructive in her tendencies, tore her clothes, broke windows, &c. After the struggle was over she closed her eyes and appeared to sleep for some minutes, and then suddenly awoke and asked where she was. This patient got a large variety of medicine, but without much apparent effect on the fits, except that large doses of chloral seemed to control them. They seemed to be related to a menstrual disorder, and when this was recovered from the fits disappeared.

In a paper by Dr Crichton Brown on the pathology of general paralysis, there is an attempt to bring the recent views of the functions of the brain to bear on this disease, and we confess that the subject is treated with a great amount of plausibility. The author believes that the disease begins with an excessive functional activity of certain districts of the brain with consequent hyperæmia. The engorgement of the vessels leads to hæmorrhages, exudations, dissecting aneurisms, &c. But as the disease progresses the

brain substance undergoes atrophy, and before death there may be great loss of tissue. In the congestion of the brain substance the soft membranes take part, and adhesion of the pia mater to the surface of the convolutions may be taken as a kind of index of the locality of the brain lesion. The author attaches great importance to these adhesions, not as forming the essential lesion, but as affording a guide to locality. The adhesions are confined to the anterior three-fourths of the brain, and the attendant atrophy of the brain substance has a similar distribution. The symptoms during life correspond with this pathological view of the disease. It first manifests itself in an abnormal stimulation or excitement of the centres, this excitement being, to begin with, comparatively feeble, but afterwards becoming more violent. The excitement is followed by loss of function, as the centres get destroyed, but the paralysis is often interrupted by periods of excitement which will correspond with transient congestions of the brain substance concerned. There is even an attempt here to bring the symptoms into closer relation with the anatomical distribution of the lesions, but into this we can hardly follow our author here. The whole paper is eminently readable, and contains much that is suggestive.

There is a paper by Dr Robert Lawson, on the treatment of some diseases of the insane by hyoscyamine, which is worthy of attention. In the summary appended to his paper, he says that this agent is of great value in cases where aggressive and destructive excitement is the leading symptom of insanity; in cases of chronic mania, with special delusions of suspicion; mania of a subacute or recurrent form; and simple mania, characterised from the first more by agitation than excitement, and due to the existence of obscure delusions and hallucinations. It is also of use in the excitement of general paralysis, in the epileptiform seizures of this disease, and in the status epilepticus; but as chloral hydrate is a more trustworthy remedy in these cases, hyoscyamine is only given where it fails, which is rarely. The most striking results are obtained in cases where patients wilfully or impulsively destroy large quantities of clothes and bedding. In wilful destructiveness, three-quarters of a grain or one grain in a single dose, "reduces the patient to reason." In cases where the destructiveness is the result of excitement occurring in the course of dementia, a quarter or an eighth of a grain every three hours (sometimes night and day) soon stops the destructiveness and subdues the excitement. Besides these special symptoms of the diseases

of the insane, this drug is useful in cases of retention of urine occurring in the progress of central nervous diseases. "Small doses also act powerfully in locomotor ataxy and other conditions characterised by frequent interrupted nervous discharges, and generally considered to be associated with sclerosis." The following is the formula employed by the author, and it will be observed that the agent is given largely diluted:—

R—Hyoscyamine, gr. $\frac{3}{4}$.
 Sp. Etheris, min. vi.
 Alcoholis, min. xvij.
 Aq. font. ad. $\bar{3}$ ij.

The alkaloid is in the amorphous form, and is supplied by Harvey, Reynolds & Co., Leeds.

The remaining papers in this volume are of a more technical nature, and we shall content ourselves with giving their titles:—The Histology of the Island of Reil, by Dr Major; the Weight of the Brain in the Insane, by Mr Crochley Clapham; on Classification and Nomenclature in Nervous Disorders, by Dr Rabagliati; Calorimetric observations upon the influence of various Alkaloids on the generation of animal heat, by W. Bevan Lewis; the Climacteric period in relation to Insanity, by Dr Merson; Cases on the Borderland of Insanity, by Dr H. Sutherland; Clinical Notes on conditions incidental to Insanity, by Dr R. Lawson and W. Bevan Lewis; the Cranial outline of the Insane and Criminal, by Mr Crochley Clapham and Henry Clarke; Notes on the Therapeutics of some Affections of the Nervous System, by Dr J. Milner Fothergill.

IV.—AN INTRODUCTION TO PRACTICAL HISTOLOGY. By GEORGE THIN, M.D.
 London: Baillière, Tindall, & Cox.

IN a recent number of this *Journal*, we reviewed several text-books of practical histology which had been lately issued. Since then Dr Thin has published a work of the same character, and from the eminence of the author as a histologist we turn to it with interest. Considering how often and laboriously the field has recently been gone over, it is no small commendation to say that the work contains much valuable information not elsewhere given. Great care and labour have been bestowed upon the subject of re-agents for the display of microscopic structure; indeed we cannot give a better

idea of the amount of pains taken with this part of the subject than by stating that there are fourteen different staining substances minutely described, and for many of them two or three formulæ given. A large proportion of these and of the other formulæ throughout the book are from French and German sources, and are as yet little known in this country. Dr Thin has conferred a very considerable benefit upon histologists by thus collecting and rendering easy of access a mass of information hitherto scattered through isolated papers, many of them continental. This, however, is not the primary object he professes to have aimed at in writing the book, but, as he says in the preface, "to make it useful to those who are only beginning to use the microscope," and we regret that the execution of this part of his plan is not so successful. Dr Thin fails in consequence of attempting too much. If he is able to get a class of ordinary students, in the short time they can give to practical histology, through even a small proportion of the processes he recommends, he must have some method of working unknown to any teacher with whom we are acquainted, and the secret of which he does not divulge. As an example, taken at random, on an estimate of the number of preparations required to work through the large print only of the demonstration of nerve, not fewer than twenty-five could be made to suffice, even with the advantage of considerable manipulative experience, and many of them we are directed to observe during several days. All this, of course, is impossible in an ordinary practical course. We regret that the more important of these processes have not been selected, and the others consigned to the comparative obscurity of small print. Besides this, the arrangement of the book, though good in the main, is not such as to facilitate the work of the student. In the review above referred to, we indicated the importance we attach to the description of the histology of the tissues as well as the mode of their microscopic demonstration. Our author certainly gives us a good deal of theoretical histology, but if his work is intended for beginners it is unfortunate that it is almost entirely of a character we may call controversial. Indeed, except when he differs from the usually accepted doctrines, Dr Thin seldom gives much prominence to this aspect of the subject. We all know that the author has contributed various valuable papers advancing new views, and these, as well as the most recent foreign and home opinions, are incorporated with the work. For this, the advanced histologist has to thank Dr Thin, but the student we fear will only be confused. In short, the book, as a hand-

book for those who have already devoted some time to practical histology, and especially to teachers of the subject, is of extreme value, giving in an easily accessible form, a large amount of useful information. Nevertheless, as a guide for beginners in the use of the microscope, we must characterise it as eminently unsuitable.

V.—AIDS TO BOTANY. By ARMAND SEMPLE, M.A., M.B. London: Bailière, Tindall, & Cox. 1877.

THIS little work, intended for medical students preparing for the first examination, does not make any pretension to originality. The author says in his preface that it is merely an abstract of leading facts. It contains short descriptions of the various parts of the plant, such as the root, stem, leaf, and flower, and the chief characters of those natural orders of plants that are resorted to most frequently in examinations. So far as we can judge from a hasty glance over the pages, great care seems to have been taken in its compilation, and all novelty in matters of nomenclature and classification has been wisely eschewed. There are one or two points, however, in which a little more information would have prevented any misunderstanding, *e.g.* at page 32 it is stated that the embryo of dicotyledons has never fewer than two cotyledons. How many are there in the Dodder (*Cuscuta*)? In those cases where we seem to have more than two it is owing to subdivision of the original cotyledons. At page 33 it is stated that the radicle of monocotyledons is never developed. Than this it is difficult to imagine a greater error, because in those cases where the development has been properly studied the radicle is always developed as in the onion (*Allium*). Iron is not a rare element in plants, as stated at p. 37. It occurs in all green coloured plants; in fact it is absolutely necessary for the formation of green colouring matter. At page 51 it is stated that the spores of ferns are similar to pollen granules; unfortunately it is not stated in what they are similar. They are only similar in being unicellular and in being developed in a similar manner. They might be said to be similar to the young ovules. Better definitions of the following organs might have been given, *viz.*:—Bracts, Phyllodes, Panicle, Thyrsus, (which ought not to have come under indefinite inflorescence), and Connective. As regards this last organ, it is stated that it neither falls

short of nor extends beyond the extremities of the anther lobes; in *Paris quadrifolia* it extends beyond the anther lobes, and in the order *Labiatae* it falls short of them. Lastly, a better classification of fruits might easily have been given.

Exchange Journals.

By DR JOSEPH COATS, *Lecturer on Pathology, Western Infirmary.*

STRICHER'S JAHRBÜCHER,

PART I.—1877.

CONTENTS.—I. A new pneumatic apparatus, and its use in the treatment of children's diseases, by Dr J. Hauke (with three woodcuts). II. Chemical investigation of a case of cystinuria, by Dr W. F. Loebisch. III. Experiment on the detection of mercury in the urine, by Dr A. Mayer (with a woodcut). IV. Investigations on the composition of the ash of blood, by Dr A. Jarisch. V. Investigations on the increase of temperature in dogs after the division of the spinal cord, by Prof C. v. Schroff, jun. VI. The form of the head of the femur, by Prof E. Albert. VII. On the physiological effect of Esmarch's ligature, by Dr S. v. Basch (four woodcuts). VIII. On the structure of the human diaphragmatic peritoneum, by Prof G. Bizzozero. IX. The development of vesical hernia, by Dr J. Englisch. X. On the hypodermic use of mercury in syphilis, by Dr J. Neumann. XI. Experiments on the absorption of chromic into the blood after the external application of chromic acid, by Dr A. Mayer. XII. A new method of detecting mercury in animal substances, by E. Ludwig (with a woodcut).

II. **A Case of Cystinuria** (*Loebisch*).—This does not presume to be anything but notes of a case in which cystine was present in the urine. The urine was carefully examined for fourteen days, and cystine was present all the time. Contrary to what some have stated, there was here no diminution in the amount of urea and uric acid, these being excreted along with the cystine in normal amounts; and in fact the amount of nitrogen in the cystine is so small that it could not be expected to exercise any appreciable influence

on the other nitrogenous constituents. The person whose urine presented this abnormal constituent was a young American medical man, and he seemed in perfectly good health.

VII. The Effects of Esmarch's Bandage (*Basch*).—

The object of this set of observations was to find out the effects produced on the circulation as a whole by the application of Esmarch's bandage. For this purpose one arm was introduced into a vessel of water, and connected in such a manner with a manometer that the slightest change of volume in the arm was at once registered by the manometer. From the experiments, it appeared that during the application of the bandage to the leg, beginning at the foot and passing upwards there was nearly always a diminution of volume in the arm. It is difficult to explain this result, and it can only be suggested that it may be from reduction of pressure in the aorta or contraction of the vessels of the skin, and perhaps the state of respiration may influence it in some cases. While the arm diminishes in volume during the application of the bandage, it increases after the application is completed. This is not an immediate result of the application, and hence it cannot arise simply from the blood of the leg being emptied into the general circulation, and so increasing the bulk of the blood everywhere else. The author speculated that it might result from irritation of sensory nerves by the pressure of the bandage; and it is known that by irritating sensory nerves it is possible to stimulate the vasomotor centres, and cause contraction of large areas of blood-vessels, the consequence of this being increased pressure in the heart and aorta from the blood being accumulated there. It was noted that the increase of volume did not occur if the bandage did not go above the knee, and it was remembered that a considerable superficial sensory branch, the saphenous, is exposed to pressure for some distance near the knee. In order to test this speculation he applied the bandage to this part alone, and obtained an increase of volume as by the ordinary method. He was also able to produce increase of volume by digital compression of the same region. After the bandage is loosened the volume of the arm generally returns to the normal, but sometimes it remains larger for a time, or even increases still more.

X. Hypodermic injection of Mercury in Syphilis (*Neumann*).—This paper gives the result of a rather

extensive experience in this method of treatment, and for properly chosen cases the author recommends it highly. It is chiefly useful in recent cases of syphilis, and it has the advantage over inunction in producing its effects more rapidly, as well as in being a much more cleanly application. It is also more rapid in its action than the corrosive sublimate, iodide of mercury, or iodide of potassium used internally. It has various other advantages; the quantity required to bring about a cure, is on the average very small; it does not usually affect the stomach or the gums; it is rapidly excreted, &c. The author particularly insists that when due precautions are taken, there is no occurrence of those disagreeable consequences which have been ascribed to this treatment, such as increase of temperature and pulse-rate, sleeplessness, diarrhoea, formation of abscess, and sloughing. The solution used in these injections is the following:—One gramme of flesh-peptone is dissolved in 50 C.C. of distilled water, and filtered. To this is added 20 C.C. of a five per cent. solution of corrosive sublimate, and the precipitate which occurs is dissolved by adding the requisite quantity of a 20 per cent. solution of common salt (about 15 or 16 C.C.). The fluid is then poured into a graduated cylinder, and distilled water added to make up to 100 C.C. In this solution each C.C. contains $\frac{1}{100}$ of a gramme of mercury. Another preparation is the following:—Dried egg albumen, 2 grammes; distilled water 178 C.C.; dissolve and filter, then add 20 per cent. solution of common salt 60 C.C.; and lastly 5 per cent. solution of corrosive sublimate 60 C.C. This makes an entire bulk of 300 C.C., and one C.C. contains $\frac{1}{100}$ of a gramme. This is the usual dose in each injection. Great precautions are used to have the needle perfectly clean, and after each injection it is thoroughly washed and dried, the water being sucked out of the needle with a small india-rubber ball, and oil sucked in. Of course the needles used for injecting a syphilitic patient will not be used for any other purpose, and great care will be taken not to prick any one with them, in case of infection.

PART II.

CONTENTS.—XIII. New observations and investigations on the use of arsenic in lymphatic tumours, by Dr A. Winwarter. XIV. The mechanism of the shoulder-girdle in man, by Professor E. Albert (Plate I.). XV. Investigations on the causes of the keratitis which follows division of the

trigeminus (Plate II.). XVI. Contributions to the pathological anatomy of the blood-vessels of the brain, by Dr H. Obersteiner (Plate III.). XVII. Investigations on the roots of the vasomotor fibres of the sciatic, by S. Stricker. XVIII. The mechanism of the hip-joint, by Professor E. Albert.

XIII. Treatment of malignant lymphatic growths (*Winiwarter*).—The author states that the treatment of lymphatic tumours by arsenic was originated by Billroth, some time ago, but it has received too little attention since then. The present paper is intended to direct the attention of the profession to the excellent results obtainable in certain cases. It is to be observed in the first place that the cases considered here are what the author calls the malignant lymphoma, and as this name may not be altogether familiar to our readers, we shall give a brief description of the disease. It has been called by a variety of names, such as metastatic lymphoma, pseudo-leuchæmia, adenia, Hodgkin's disease, and even lympho-sarcoma. It is, however, to be distinguished from true lympho-sarcoma, which is simply a sarcoma arising in a group of glands and spreading thence. The treatment about to be described has no influence on lympho-sarcoma. The disease under consideration, and which the author prefers to call the malignant lymphoma, begins in a particular group of lymphatic glands, and these simply enlarge, preserving their structure. Each gland in the group enlarges separately, so that the disease does not pass by continuity beyond the glands to the tissues around. There is no tendency to suppuration, or any degeneration in the enlarged glands, and in this respect it will be observed there is a marked contrast to scrofulous disease of the glands, and a similarity to the enlargement of leuchæmia. As the disease proceeds the enlargement spreads to other glands besides those primarily involved, and the extension follows to a certain extent the direction of the current in the lymphatics. By degrees almost all the glands in the body may become enlarged to an enormous extent, and enlargement of a similar character may occur in other lymphatic structures, the tonsils, the closed follicles of the intestines, the Malpighian bodies in the spleen. These anatomical changes present a considerable analogy to what is seen in certain cases of leuchæmia, but there is no increase of the number of white corpuscles in the blood. Besides these hyperplasias of normal lymphatic structures, we may have metastasis of the disease to the liver, lungs, kidneys, &c.,

where tumours spring up of a similar structure, and these tumours are distinctly defined growths, not mere infiltrations of the tissue. Looking to these characters it may be said, that if we meet with a strong young person, who presents an indolent enlargement of a group of glands, without any source of irritation in the neighbourhood, then we may suspect the existence of this disease. It generally, but not always, begins in the glands of the neck, and if left to itself is certainly fatal. The disease has been observed in a considerable number of cases to follow intermittent fever, and it may set in a considerable time after the fever. It has also been seen to follow an acute enlargement of the glands, and as an instance of this, a case is described here, in which the sting of a bee produced acute lymphangitis and lymphadenitis; the latter manifesting itself in an enlargement of the axillary glands. In this case the disease under consideration occurred, and it began in the axillary glands, contrary to its usual habit. It is of some consequence to note that the disease generally has attacked vigorous healthy persons. The consistence of the tumours produced varies considerably; they may be so soft as to be almost fluctuating. Pain is generally absent, but it may be very severe. The condition of the blood will always call for attention, as on this will hinge the diagnosis from leucæmia. There is no increase of white corpuscles, but the red corpuscles are often unusually pale, and they do not run into rouleaux in the normal fashion. There are also in the blood little particles which look like bits of red corpuscles, and which vary in size from very small to near the size of red corpuscles. Similar particles have been observed in pernicious anæmia, and have even been considered characteristic of that disease, but in this disease there is no special anæmia.

We shall now give an outline of the treatment adopted, and it may be remarked that, while the disease left to itself goes on to a fatal issue, and removal of the tumours by operation is of doubtful benefit in any case, the author has cases in which by the use of arsenic the most prominent tumours in all regions have been made to disappear, or very much diminish in size in the course of three or four months. He has no case of actual and undoubted cure to offer, but a case like the following shows that the treatment is of great service:—A patient presented himself with tumours in the neck, which were producing such interference with respiration that death must have soon resulted, and the tumours were absolutely beyond operation. The use of arsenic

caused the whole tumours to disappear, and death was averted. The patient was able to go back to work, and the cure lasted for a year, after which there was a recurrence and respiration was even more rapidly interfered with than before. The treatment again caused complete disappearance of the tumours. There was a second recurrence four years after the first onset of the disease, which was being treated at the date of the writing of the paper, and there was already considerable diminution. The duration of the treatment is variable, and it may even be prolonged over a whole year, but this is exceptional, and there is generally rapid diminution. From the above case it will be seen that the treatment is equally applicable on a recurrence of the disease, and this case would lead us to believe that the affection may be kept local. The best results are obtained where arsenic is applied locally in the form of injection into the tumours, at the same time as it is being taken internally. In both modes of administration Fowler's solution is used. The dose for internal administration is, to begin with, five minims a day, with five minims of tincture of perchloride of iron, given morning and evening, either during or after meals. The dose of Fowler's solution is to be increased every second or third day by a drop, till symptoms of poisoning appear. These generally begin to show themselves when twenty-five or thirty drops are reached, and they are, disturbances of the alimentary canal, burning in the throat and stomach, diarrhoea, &c., which are treated by a few drops of laudanum. When these symptoms appear the arsenic should not be suddenly stopped, or much reduced, or you may get collapse, but the dose should be reduced gradually as it had been increased. It is necessary for the success of the treatment that large doses should be given, and it often happens that even with doses of forty drops there are no disagreeable symptoms. Along with the internal administration should go the local application, and this is done by an ordinary hypodermic syringe, whose needle should be sharp. The needle must penetrate into the substance of the tumour, for if the solution passes into the surrounding tissues it may cause great pain. The injection may be made sometimes two or three times in the day, and at first the quantity will be small, two or three minims, but later on, when the system is thoroughly saturated with arsenic, the third of the quantity held by the syringe may be injected. If no great irritation is produced there may be a daily injection, or from day to day the locality of the in-

jection may be varied. If the glands are inflamed the injection should be intermitted, and if there is pain produced, it should be treated with warm applications. After the prolonged use of the agent sleeplessness may occur, but this may usually be successfully treated by the use of beer at supper, or by bromide of potassium in doses of thirty to forty-five grains. The most remarkable symptom during the treatment is the occurrence of fever, which may be continuous or intermittent. The fever does not occur unless the glands are getting smaller, and the author believes that the arsenic causes a tendency to chemical decomposition in the tissues, and that the products of this decomposition cause the fever. The fever itself may aid in the reduction of the tumours, for it has been noticed that during violent fevers and in erysipelas, &c., new formations sometimes diminish. Besides reducing the tumours the arsenical fever causes general emaciation.

The paper concludes with a case of leuchæmia, in which this treatment seemed to be pursued with advantage.

XV. The Keratitis after division of the fifth (*Feuer*).—The author concludes from his experiments, that the inflammation of the cornea after division of the fifth is not due to any interference with the nutrition of the cornea; this operation neither induces inflammation by itself nor renders the cornea less able to resist external agents which produce inflammation. The keratitis has its cause in the suspension of the closure of the lids. The under part of the cornea dries and mummifies, and the necrotic portion acts as an irritant, producing inflammation.

XVI. The Pathology of the finer blood-vessels of the brain (*Obersteiner*).—The author first describes the normal structure of the vessels of the brain, meaning by this those existing actually in the brain substance, and not those running in the pia mater. He afterwards gives the results of his examination of the vessels in ninety-one cases, taken without respect to the diseases of which the patients died. He describes the pathological conditions found in these cases, and it is very noteworthy to observe that certain conditions which are commonly regarded as pathological, are of almost constant occurrence. For example, the author observes that he did not meet with a single brain, in which the vessels were in every part free from fat in the adventitia, the brains of children presenting it in larger quantities

than those of adults. Yet we find this fatty degeneration of the adventitia described by some writers as a pathological condition of some importance. The paper is too much one of detail for abstraction here, but we would advise all who are studying the minute anatomy of the brain, to give it a very careful perusal, and particularly to observe, the parts which describe the existence of fat and of pigment in the walls or neighbourhood of the vessels.

TRANSACTIONS OF The Medico-Chirurgical Society.

SESSION 1876-77.

TENTH MEETING.—6th April, 1877.—Dr Morton in the chair.

I. CASE OF DOUBLE POPLITEAL ANEURISM.

Dr Alexander Patterson read "A case of Double Popliteal Aneurism," and exhibited the patient.

Dr Perry remarked on the superiority of the mode of treatment by pressure over the operation of ligature.

Mr John Reid had no doubt the treatment adopted by Dr Patterson was a great improvement on tying the artery; but it was open to question whether it would have been equally successful in an aneurism of larger size, and in which the process of coagulation would take a much longer time.

Dr Graham, Paisley, expressed his decided preference for the treatment by digital compression.

Dr Renton, said that no doubt compression by the fingers was preferable in a hospital in which relays of students could easily be got to carry out the treatment, but in country districts the circumstances were very different. It would be convenient, therefore, if some apparatus could be devised to apply pressure by, say three points. This would enable the point of pressure to be varied. Tuffnell's apparatus was somewhat difficult to work. The apparatus in the improvement of which Dr Watson of Edinburgh had interested himself was very simple, but it was apt to erode the skin. In one case, he remembered, the sheath of the vessel was exposed from this cause.

Dr Morton said that the one great objection to the pressure treatment was the difficulty—sometimes the impossibility—of the patient bearing the pressure for the necessary time. Even digital compression had in some cases to be abandoned. It was a gain to alter the point of pressure, and various modes of doing this had been suggested. He had tried flexion, effected in such a way as to produce pressure. In one case this treatment appeared to succeed, but afterwards it did not work satisfactorily. There

was no doubt a great difference in the amenity of different cases to treatment. Some cases succeeded with pressure; others failed. He would like to see a statistical comparison of the results of this operation with that by the ligature.

Dr Patterson said by using two compressors they were able to shift the point of pressure. There was no doubt that the rapid pressure method would be most successful, and could be done with little risk. The circulation was completely stopped; but it was not presumed that the patient was able to bear the pressure; and hence the operation was done under chloroform. Anæsthetics were not necessary in the treatment he had adopted in his case.

II. CUT THROAT, WITH A VERTICAL WOUND.

Dr Johnstone Macfie read "Notes of a case of Cut Throat with a Vertical Wound," which appeared at page 206 of the April No. of the *Glasgow Medical Journal*.

Dr Macewen said that the medico-legal points of the paper were more important than the surgical. A vertical wound in the throat would in all probability be suicidal, not homicidal. In the case of wounds inflicted by another person, it was probable that they would lie across the throat. It was stated in text books that suicidal wounds were generally oblique. In the last five cases of suicidal wounds which had come under his observation, the cut was transverse. One of the cases was noteworthy in some respects. The man had been accused of theft, and during the time the police were being sent for he retired into a water-closet, from which a stream of blood was soon observed to proceed. It was found that he had cut his throat with a small penknife, not particularly sharp. With this small instrument he had made a sharp, sweeping wound, cutting through the trachea and the œsophagus. One case he had seen in the Infirmary in which the suicide was 80 years of age. The wound in that case was not very deep. It had been mentioned in the case detailed by *Dr Macfie* that occasionally some little difficulty was experienced in regard to passing the stomach pump. The directions usually given were to keep the head as far back as possible. He did not concur in the propriety of this instruction. When it was followed out the spinal column was so thrown forward, and the other parts so adjusted that the tube was very apt to slip. Instead of producing a convexity, the obvious plan to facilitate the passage of the tube was to produce a concavity by throwing the head forward. He had learned this from observing the facility with which a hospital patient managed to introduce the tube in the manner he had indicated when unable to get it down under the ordinary method.

Dr Alexander Patterson said that the case appeared to be almost unique. In all his experience he had not met with one similar to it. From first to last the treatment was admirable. There was great tendency in cases of this kind, when the patient was advanced in years, or subject to chronic bronchitis, to sink from pneumonia.

Mr E. M'Millan said that *Dr Macfie* had mentioned that on one occasion the fluid which the patient was swallowing came out of the wound. He did not hear anything in the narrative of the case which explained this. Was there some ulceration of the œsophagus, or other communication which would give rise to this occurrence?

Mr John Reid said that the exfoliation of the bone in this case was to him the most striking part of the narrative. He thought the use of carbolic acid a questionable procedure in such a case, as it would tend to irritate the wound, and keep it open.

Dr Graham, Paisley, pointed out the advantage in cases of this kind of giving food in a pulaceous form, which could sometimes be taken when fluid food could not be introduced.

Dr Morton coincided so far with Mr Reid in believing that carbolic acid when applied to the surface of an open wound did not hasten healing. Probably, however, it did not retard the healing process.

Dr Macfie said that the facts of the case did not appear to bear out the idea of an ulceration of the œsophagus into the larynx. It was quite possible that there was some ulceration in the wound at the back wall of the larynx into the œsophagus. With regard to the treatment by dilute carbolic acid, it had been applied simply to keep the parts clean. It was not constantly applied, but only occasionally, to keep down putrefaction. He agreed with Dr Macewen that the plan of throwing forward the head was that by which the tube could be best introduced. In the present case there was no great difficulty experienced in the matter.

ELEVENTH MEETING.—4th May, 1877.—Dr Watson, President, in the chair.

I. EPIDEMIC SORE THROAT.

Dr Fraser, Paisley, read "Notes of an Epidemic of Sore Throat, presenting points of peculiar interest."

Dr Taylor, Paisley, said that to trace the origin of the disease was at first a matter of considerable difficulty to him. It appeared to have had some specific origin. The milk having been suggested, he called at the dairy implicated, but could not ascertain that there was any disease there at all. With regard to the character of the affection it had been fairly described by Dr Fraser. A great many cases had the spots on the tonsils. There were no glandular swellings. In some cases there was very acute rheumatism. The theory of infection through the milk was not borne out by his enquiries. Apart from questions of fact it would be difficult to say in what way the milk would act; would it be locally or constitutionally? There were considerable constitutional symptoms in most of the cases. It must be remembered in accounting for the outbreak, that the season was very cold, and that there was a good deal of vegetable growth, the checking of which would generate decomposition. He would be inclined to attribute the epidemic very much to this cause. In some aspects it approached very nearly to scarlatina. In the rheumatic cases, for example, the skin generally came off. There were fortunately no fatal cases; and no affection of the windpipe accompanied the epidemic.

Dr Richmond, Paisley, said that not having heard the earlier part of the paper, he was unable to any extent to offer an opinion on it. Personally he was of opinion that contagious disease could be generated by milk, and not long ago, he had expressed this opinion, when officially interrogated on the point. But in regard to this particular epidemic he had made enquiries which appeared to negative the milk theory. In the dairy-shop the milk was retailed along with porter and ale, and there was no direct communication between the sleeping apartments of the house and the shop. He asked whether there was any case of this disease in the house, and ascertained that a daughter of the house had a little sore throat, but it lasted for two days only, and that she had frequently had similar attacks before. He held that it was very improbable that an epidemic of diptheritic sore throat of the kind described, with glandular swellings, would take its origin from a catarrhal sore throat of two days' duration. After

describing some of the cases he had seen, and especially drawing attention to the rheumatic character of several of the cases, Dr R. expressed the opinion that the raw east wind had much to do with the origin of the affection.

Mr John Reid considered the milk theory of the origin of such an affection preposterous, and that the causes alluded to by former speakers, viz., the prevalence of east winds checking vegetation, as much more likely to give rise to it. He had seen innumerable cases of sore throat epidemic, in detached and isolated villages, where the idea of milk origin was out of the question. There had lately been a great tendency among sanitarians to find the origin of epidemic disease in milk, and water, and food. But the fact was that these epidemics had been prevalent more or less at seasons during the last 40 years of his practice. The same type of epidemics existed now as when he began practice. It was very remarkable that within, comparatively speaking, the last few years only have these diphtheritic affections been called by that name. Before 1827, when Bretonneau called attention to the affection, it was little heard of. Now, however, every severe case of sore throat with white patches was a case of diphtheria. The diagnosis was very loose as regarded the distinguishing mere sore throat from genuine diphtheria.

After some remarks by *Dr Tennant*, *Dr Fraser* said that it had been apparently assumed by some of the speakers that he had, as a matter of fact, attributed the spread of the epidemic to the agency of milk. He had not done so; but had simply indicated some facts, whether causative or not, in regard to the coincidence of the spread of the affection with a certain track of milk supply. The milk theory had been suggested to him at an early stage of the epidemic, and he attached no importance to the early coincidences, till case after case occurring, he could hardly dismiss the thing as impossible.

II. CASE OF ANEURISM RUPTURING INTO THE THORAX.

Dr Fraser, Paisley, read "Notes of a case of Aneurism rupturing into the Thorax."

III. A CASE OF SUPPOSED HYDROPHOBIA.

Dr Joseph Coats read a paper by *Dr Yellowlees*, Royal Asylum, Gartnavel, on a "Case of Supposed Hydrophobia," which appeared at page 213 of the April number of this *Journal*.

Dr Charteris pointed out that there was no thirst, or increase of temperature, which he had always understood to be the necessary accompaniments of fever. He was not aware of any recorded case of death from typhoid fever in the fourth day. Altogether if the case was not one of hydrophobia, it looked still less like one of fever.

Dr Morton said that death from typhoid fever at such an early stage was certainly uncommon. Typhus fever was sometimes fatal at such a very early stage; typhoid seldom or never. In reference to the disinclination to swallow, he noticed that in one of the cases of hydrophobia in the Infirmary, the patient with a little pressing could be got to swallow without difficulty; had he been directly asked to swallow, he would no doubt have evinced disinclination, as he was averse to swallow anything. Spitting was characteristic of a certain condition of the stomach, and occurred in several diseases, in which large quantities of fluid were frequently spat out.

Mr John Reid thought the present a case of cerebritis, combined with meningitis. The complications which had been mentioned would all occur

subsequently to the cerebral affection. He had seen such cases, and it was no uncommon thing for the patient to remain sensible, as the man in the present case is represented to have done.

Dr Geo. Buchanan said that at the discussion in the Society on the subject of hydrophobia, which took place two or three months ago, he had made a hurried remark, which had caused a little astonishment. The remark was to the effect that many cases of so-called hydrophobia were more fit for treatment in an asylum like Gartnavel, than in an ordinary hospital. The bearing of the remark simply was to show that there was a spurious as well as a real class of hydrophobia cases. The cases which simulated hydrophobia were indeed more numerous than those of the actual disease; and it was noteworthy that the simulated cases occasionally terminated fatally. There was indeed hardly any limit to the range of diseases which had nervous counterfeits. Constitutional syphilis was even sometimes imitated. In cases of hydrophobia, real or spurious, the patient should not be placed in the general wards of a hospital; but, on the contrary, should be segregated as much as possible, and one or two attendants told off to nurse.

Dr Morton pointed out, as a remarkable feature in the recent hydrophobia visitation, viz., that no mad dog had yet been caught.

Dr Fergus said the symptoms described in *Dr Yellowlee's* paper struck him as very like those characteristic of a state between dipsomania and delirium tremens. A narrative of the man's movements prior to the attack would have thrown some light on the matter. Another thing he would have desiderated here, viz., an analysis of the contents of the stomach.

Dr Gairdner said that he had nothing of worth to add to the discussion. He had had the opportunity of making a *post-mortem* examination of four or five cases of hydrophobia, but without being able to discover anything amounting to pathognomonic facts, such as those which had lately been recorded by *Dr Joseph Coats*. On the general question he could not enter, though it was one in which he had been much interested. After referring to the opinions of the late Professor Dick, who was an out and out disbeliever of the existence of any causative connection between the disease called rabies in dogs, and that known as hydrophobia in man, believing the latter to be a nervous affection, *Dr G.* pointed out two lines of enquiry bearing on the question, viz.—(1) whether persons in early ages, that is, before the period when hysteria or hypochondriasis could be a factor in the case, were equally liable to the affection as those older? and (2) the large proportion of deaths in the persons attacked.

Dr Joseph Coats said that it was not uncommon for cases to be introduced into lunatic asylums as acute mania, which turned out to be typhoid fever. The unique theory in the present case was the fact that being typhoid it was thought to be hydrophobia. With regard to *Dr Morton's* remark that no mad dog had been caught, he had himself examined the body of a dog, which undoubtedly died of rabies; and he had found exactly the same lesion in the dog as he had pointed out in the cases of human subjects, who had died of hydrophobia.

Glasgow Pathological and Clinical Society.

SESSION, 1876-77.

TUESDAY, 17TH APRIL, 1877.

Dr Gairdner showed a case of *ATHETOSIS*. *Dr Gairdner* remarked that cases of this disease had perhaps formerly been recorded under other names, but several years ago he had shown a case to the Medical Psychological Association, and a correspondence which was then carried on with regard to the disease proved to him that the name *Athetosis* was one not generally known at that time. He wished therefore to precede his remarks on the case by saying that the name *Athetosis* had been introduced by *Dr Hammond*, to indicate a peculiar state of the limbs (usually the arms), in which there was an inability to maintain a fixed position. The derivation was from the Greek *αθητος*, without fixed position. *Dr Gairdner* referred to the various cases which had been put on record of late years, but said that it must be regarded as a very rare disease, he having met with but three cases which could be regarded as true *athetosis*. In the case now shown, which was that of a girl seven years old, the left arm was never at rest, being constantly affected by movements, usually those of flexion, but alternating with those of extension. There was no considerable power of prehension, but by watching the movements, and as it were lying in wait for the contraction of the fingers, patient could lay hold of things in an awkward way. The left leg was affected with similar movements, though to a less extent than the arm. There was no history of syphilis or paralysis or convulsions, except one convulsion at the age of 18 months; but there was an obscure hint as to a fright received in former years, and a story of bye-gone pain in left frontal region and left arm. The intelligence was perfect. The movements of the leg were interfered with to the extent of an indefinite awkwardness, and if the leg was held there was a tendency to muscular contractions specially affecting the great toe. The *serratus magnus* and muscles of the scapula were involved in the movements of the upper extremity. None of the muscles showed any trace of hypertrophy as yet. The tongue deviated a little to the left. Patient was well nourished and in good general health. The family history was good. The onset of the disease was about a year ago, and was very indistinctly connected with a fright received by the patient shortly before that time. The speech was affected at first, not with stammering or paralytic thickness of utterance, but with a peculiar slow utterance; this had now disappeared, and the speech was normal. Some slight improvement had been noticed in the state of the hand.

Dr Gairdner remarked that all the other cases on record were those of adults with irregular habits; and he pointed out that this case was perhaps the most purely uncomplicated case of athetosis on record.

Dr Finlayson showed a girl to compare with the preceding case. The following are notes of the case from his ward journal. A girl nearly nine years, was admitted first in November 1875, and again recently. The illness seemed to date back to the winter of 1874, and began with a feverish attack and frontal headache; in April 1875, some awkwardness in walking was noticed, and the power of the left hand became less. It was supposed also that about this time the face had been affected, and there is likewise an account of her then having double vision, but no squint was observed. After a period of slight improvement as regards the face and legs, the hands, fingers and thumb began to assume a flexed position. Vision pretty good, but on ophthalmoscopic observation, some evidence of an old neuro-retinitis on both sides, with a trace even of the choked disc appearance. (February 1876.) No very marked atrophy or coldness of the limbs, and response of the muscles to the faradic current is good. General health very good, and whilst in the hospital no sickness of any kind. Under treatment by electricity a slight but decided improvement in the hand; she was also treated by tonics, and latterly by iodide of potassium. She was readmitted shortly after her dismissal, as her mother thought she was walking worse. On February 29th, 1876, her eyes were again examined, and she was found to be hypermetropic about $\frac{1}{12}$, the discs much less prominent, but not at all woolly, the vessels still curved forward a little. In the left, which seemed most seriously affected, the disc was grey coloured, and oval-shaped vertically, indicating apparently some atrophy with contraction.

September, 1876.—She was again brought up to be shown, her health had been pretty good, but a little frontal headache was occasionally complained of, the use of the paralysed limb had not improved, and the rigidity of the flexors of the fingers and thumb had become more extreme. She walks habitually on the toes of the paralysed limb, but there seems to be no shortening on measuring from the ilium to the ankle. Readmitted April 14th, 1877, as her walking had become worse, but her general condition had been pretty good, and she had been able to be at school. The contraction of the tendons of the forearm is, if anything, increased, and on this occasion there was noticed the addition of spasmodic movements in the paralysed arm, which are at least more marked than they were formerly; it cannot be said quite definitely whether they were or were not present during her former stay in the hospital. These spasmodic movements occur when the hand is put into certain positions, so as to prevent her from retaining the hand in these positions, and they also occur when the child is asked to perform certain movements. The case presents an intermediate condition between post-hemiplegic rigidity and the peculiar spasms of athetosis. Urine free from albumen and sugar. Very slight systolic bruit at apex.

Dr Robertson said he had seen the case formerly shown by *Dr Gairdner* to the Medico-Psychological Society; and though in that case the health was less robust, there was otherwise a close resemblance between the cases shown to-night and that one. In it, however, there was no deviation of the tongue, and therefore a lesser degree of tendency to hemiplegia than in the case shown at the present meeting. These cases were rare; he had never met with one in all his experience in the Town's Hospital at all closely resembling either of *Dr Gairdner's* cases. It was not chorea or paralysis agitans. The same muscles were involved in athetosis as in hemiplegia, and this led him to think that the seat of lesion would be found (not in the cortex, for the mind did not seem to be affected) in the same place in both, probably the corpus striatum.

Dr Gairdner remarked that *Dr Finlayson's* case pointed to the lesion being central rather than peripheral. But no lesion had yet been recorded in athetosis.

Dr Foulis showed a TUMOUR which he had removed from the larynx of a man aged 27. The operation was successful, the incision uniting by first intention. The incision involved the thyroid cartilage in the middle line, and the two halves were held aside by hooks to allow of the removal of the tumour which was seated just below the anterior end of the left vocal cord. The seat of the tumour was touched with the actual cautery, and the parts were united carefully by sutures. The tumour was a nodular, rounded flattened mass of about the size of half a raspberry, the base on which it was sessile being half-an-inch in diameter. The structure was that of the papilloma. Patient was still under observation. The voice was distinct, but slightly hoarse.

Dr Macewen showed a SARCOMA in the lower end of the femur in a patient (female) under his care in the Royal Infirmary. The history of the case bore that three months before admission the tumour began to grow, the growth being rapid at first, but latterly slower. On admission the lower end of the thigh was bulbous. In the first week after admission the circumference of the bulbous mass had increased one inch, and therefore amputation in the upper third of the thigh was resorted to at a point where the bone seemed to be unaffected. The growth was sawn up after the operation, and was then seen to be a sarcoma involving both the medulla and the periosteum. The structure was that of spindle-celled tissue. The bony shaft of the femur was eroded and perforated at one place by the growth.

Dr Macewen also showed a group of OSSICLES removed from the vicinity of the ankle joint. There were two small cartilaginous nodules and one bony one in the group, which probably projected into the joint, as a good deal of synovial fluid escaped during the operation. The individual portions were faceted together, and the whole had a joint or synovial cavity separate from the ankle joint. A synovial bursa existed on the outer aspect of the group, below the skin.

Dr Foulis referred to *Volkman's* description of the origin of such osseous and cartilaginous nodules in the connective tissue and periosteum

near joints, and of the manner in which they tended to protrude into the joint in their growth.

Dr Gairdner and *Dr Joseph Coats* showed a TUBERCULAR TUMOUR in the right lobe of the cerebellum accompanied by tubercular meningitis of the base extending down the cord, together with a cysticercus in the left corpus striatum, forming a small tumour not much larger than a split pea. The case was one of remarkable interest from a clinical point of view, but considering the multiplicity of the lesions found after death, the relation of the symptoms to the morbid appearances was a little difficult to define. Eighteen months before admission to the infirmary, the patient, a girl at that time $5\frac{1}{2}$ years of age, and previously healthy, was affected with paroxysms of headache, but, so far as could be ascertained, no vomiting or convulsions. Twelve months before admission, however, the physicians consulted in Belfast had given to her mother a general diagnosis of "water in the head." Nothing new occurred till about seven months before death, when paralysis, first of the right arm and leg, then afterwards of the left leg seem to have occurred successively, and were treated in the Royal Infirmary with some degree of gradual improvement. In the course of treatment, however, complete amaurosis supervened. After this, there is again an interval when details are wanting, up to her admission into the Western Infirmary a month before her death. At this time she was perfectly intelligent, answered questions rather slowly, but with apparently good memory, sensation apparently normal, walking unsteady and with trailing of the right leg. The grasp of the right hand relatively weak, but nowhere complete paralysis. The nutrition of the affected limbs good; excito-motor phenomena not obviously abnormal; no unusual nervous excitability, no lethargy or coma, pupil of left eye slightly dilated and not very contractile, sight of the left eye absolutely gone, and that of the right very defective, the hearing of the right ear so defective that a watch is only heard when in actual contact, on left side hearing normal; possibly slight deviation of tongue to the left, none of uvula. At various periods of the case irregular lateral movements of the eyeballs (nystagmus) were noticed, but no strabismus. A question was raised during life as to enlargement of the head, the mother having a decided impression that for the last twelve months her head had been getting broader, and stating with equal decision that she had a small head before. There were no glandular enlargements anywhere. The condition of the teeth was carefully considered, but it could not be distinctly ascertained that there was any evidence of hereditary disease. The temperatures at first normal, presented a slight tendency to rise during the month she was under treatment, the highest mean temperatures, however, being $100^{\circ}.6$ M. and $101^{\circ}.1$ E., and the absolute maximum of all the observations $101^{\circ}.8$. Ophthalmoscopic examination of the left eye by *Dr Reid* showed the optic nerve pale and somewhat greater in diameter than usual, but with no distinct evidence of engorgement, choroidal pigment deficient. Right optic nerve also larger than normal, and choroidal

pigment also deficient. The condition of patient became very gradually worse, especially as regards the headache, and ultimately a lethargic condition supervened, passing extremely gradually into coma without any one of the usual symptoms of tubercular meningitis, e.g. without convulsions, strabismus, vomiting, or any remarkable condition of the abdomen beyond constipation. The coma was attended by dilatation of the pupils, and in its earlier stages by very remarkable irregular undulatory movements of the iris, having no relation at all to the degree of illumination; these however had almost ceased before death, which occurred from pure coma, complicated at last by dyspnoea arising from obstruction in the pharynx and larynx by a tough mucus, which almost suggested the possibility of diphtheritic membrane. One or two attempts were made to bring out the *tache cerebrale* of Trousseau, but without any definite result, the lines of colour not being nearly so well marked as those produced in a child convalescent from tubercular peritonitis in the same ward. The pulse and respiration were rather rapid throughout, but with no special cerebral character.

On post-mortem examination, the chief lesion discovered was a large tumour of the cerebellum. The tumour consisted of a dense cheesy mass covered by a thin film of transparent tissue; and it measured two inches from before backwards, and one and a half from side to side. It almost completely occupied the right lobe of the cerebellum, the only points of this lobe not involved being the anterior extremity and the internal aspect. The middle lobe was quite free. The cerebellum was pretty firmly adherent to the dura-mater, and the dura-mater to the bone in the right posterior fossa, in a situation corresponding with the inferior surface of the tumour. The brain presented in addition the usual appearances of tubercular meningitis—exudation at the base, dryness of the surface, distension of the lateral ventricles with clear fluid to the extent of 8 oz. There was also a well marked exudation on the surface of the cord, giving a granular appearance to it. It was principally beneath the arachnoid, but had also to some extent caused adhesion of the arachnoid to the dura mater, and had even extended to some extent on to the roots of the nerves. In the left corpus striatum a small tumour the size of a split-pea was found. It was of a dead white colour, and was contained in a cyst of a brownish colour from which it readily shelled out. The tumour was at first taken for a *psammoma*, as it was found to be mainly composed of a membrane dotted with innumerable calcareous particles. But afterwards the head of a cysticercus was found with the circle of hooklets and four suckers. The large size of the hooklets and the four large suckers indicate that the parasite is the cysticercus or scolex of the *tænia solium*, the calcareous particles being just those found in connection with the scolices of this and other tape-worms. In regard to the shape of the head it was noted, that there were indications of unusual enlargement. The parietals especially were bulged out, and the calvarium as a whole

was extremely thin, there being almost no diploë. It was noted in addition that the pericardium was adherent, and contained abundant yellow flat prominences which were no doubt tubercular (tubercular pericarditis).

Dr Reid had examined the eyes during life in this case, and found the left optic disc pale and large—the right optic disc bluish and large—there was choroidal pigmentation in both, but no evidence of pressure. The eyes were sent to *Dr Reid* after removal, and the following is his report: A careful examination of the eyes after removal from the body showed no hypertrophy or dilation of the sheaths of the optic nerves; on making a horizontal section of the eyeball through the optic nerve, the latter was seen to project beyond the level of the retina in the form of a flattened elevation, extending for some distance on either side of the optic nerve entrance, corresponding with the apparent size of the optic nerve (twice the normal size) as seen by the ophthalmoscope during life. Under the microscope this elevation was seen to consist mainly of condensed cellular and fibrous tissue, occupying the cleft formed by the separation of the fibres of the optic nerve, and partially involved in the fibres of the expansion of the nerve to the extent already indicated. The retina for some distance around the optic nerve was separated, and the space between the retina and choroid was filled with exudation. The transverse bands of the lamina cribrosa were hypertrophied, the interstitial connective tissue of the optic nerve was in excess, opaque, and filled with oval nucleoli. The optic nerve fibres were obscured, if not replaced by the connective tissue. In the retina the layer of rods and cones was replaced by exudation, derived apparently from the choroid and cementing it to the retina. The only other change observed in the retina was in the intergranular fibres, which were thickened and ragged in their outlines. The affection of the optic nerves appear to have been limited to the interstitial connective tissue, and in the retina to the neuroglia, and probably of an inflammatory character.

Dr Donald Fraser quoted an analogous case to the one given by *Dr Gairdner*.

May 8th, 1877.

Dr Gairdner showed an EPITHELIOMA OF THE COLON at the junction of the transverse and descending parts where the whole of the structures were matted together with the spleen and the end of the stomach. In the intestine there was a quantity of dark coloured stuff. There was also cancer disseminated over the peritoneum and omentum and some fluid in the peritoneal cavity. Patient was 57 years old, and had been in active employment and good health for thirty years back. He began to suffer in January, 1877, from distension of the abdomen, and the diagnosis was ascites as there was no thickening felt; and as there had been a habit of taking spirits after work was over, on an empty stomach, and as the liver percussion dulness was limited, there was thought to be cirrhosis hepatis. He had much pain after taking food; and considerable flatulence but no vomiting. There was a tendency to diarrhœa.

Dr Joseph Coats described the cancer as affecting in the first place the mucous membrane, and next the muscular coat, and lastly the serous coat of the bowel, as could be easily seen to have been the course of events on looking at the section of the cancer mass. The dark coloured matters in

the bowel were also found in the stomach, and therefore could not have been derived from the cancer, and were most probably of other origin.

Dr Gairdner said the dark colour of the contents of the bowels must have been due to the iron which the patient was latterly taking.

Dr Macleod, of Kilmarnock, gave notes of two cases of TYPHOID FEVER in which perforation of the bowel took place.

Dr James B. Russell said that these cases threw great light on the bearing which rest as a mode of treatment must have on the course of these typhoid cases.

Dr Macleod, of Kilmarnock, showed parts from a case of CANCER OF THE LIVER in a man *æt.* 67, who had suffered from occasional attacks of biliary-colic, but who had continued in fair general health up till two months before death, when jaundice, epigastric pain, and vomiting began to trouble him. There was fulness of the epigastrium to the touch, and the diagnosis of malignant disease of the liver was made. The common bile duct was evidently obstructed, as the stools were pale while the urine was darkened by bile so as to resemble porter. Death took place suddenly, and there was found after death cancer of the right lobe of the liver, from which hæmorrhage had taken place into the peritoneum. The gall-bladder, colon and liver were all matted together; the gall-bladder was full of calculi, some of which occluded the common duct. At the back part of the liver was a sort of sac or cavity full of bile, close to the spinal column, containing 4 oz. of bile. This he regarded as a fortuitous collection of bile in a dilated gall duct.

At *Dr Gairdner's* suggestion the parts were referred to a committee for dissection and report.

[*Dr Foulis* and *Mr Henry E. Clark*, the members of committee, have since examined and dissected the specimen and report as follows:—The bile ducts in the liver tissue are much dilated and sacculated, and contain small gall stones. At one place a dilated duct almost filled with gall stones leaves the liver tissue and becomes greatly enlarged and adherent to the under surface of the diaphragm, where it forms a thin-walled sac of the size of a pigeon's egg, lined with reticulated mucous membrane like that of the interior of the gall-bladder. The liver tissue is friable, and so altered as to be difficult of examination. The lymphatic glands connected with the liver are enlarged.]

Mr Henry E. Clark reported with respect to the SKIN FUNGUS sent home by *Dr Macgregor* from Fiji. It was found impossible to cultivate the fungus, and no information could be got from those interested in these fungi who had been consulted by *Mr Clark*. The general impression seemed to be that the forms shown were the mycelial growths of higher forms of fungus. Some more fresh specimens of the fungus were on the way home and would be more minutely examined.

Mr Henry E. Clark also reported on the further dissection of the SIREN shown at previous meeting. The sciatic nerves and gracilis muscles were found separate, and the union of the thighs formed merely of the skin. The internal condyle of the femur lay facing forwards; the head of the femur was normally placed and the twisting of the thigh was confined to

the shaft of the femur. The sartorius, gracilis, and adductor and extensor muscles of the thigh were present, but none of the hamstring muscles. The upper part of the body was normal. Mr Clark commented on the interesting point of the half rotation of the thigh in this case.

Dr Foulis showed for *Dr Hugh Miller* a FETUS which had several malformations, one of which bore on the rotation of the thigh in the preceding case (Mr Clark's). In this foetus, prematurely and stillborn, there was hare-lip, and spina bifida; the neck was absent, the head being set close upon the chest; both feet were in the condition of talipes varus. Dr Foulis pointed out the position which the legs occupied on the front of the trunk of the foetus, the fibular sides of the legs being opposed to each other, and the knee thus rotated so as to present the internal condyle forwards. This was the natural position of the legs in a foetus, and if union of the legs below the knee were to occur during development, then the state of affairs would be found as in the siren shown by Mr Clark, viz., rotation of the single united knee forwards. Dr Foulis alluded further to the bearing which this had on the production of talipes varus, which was simply an imperfect unfolding, as it were, of the feet and legs from this foetal position from arrest of development, and not as was so often supposed due to spasmodic or tonic contraction of the tibial muscles. He showed a dissection of a case of TALIPES VARUS in the adult, which showed fully the point insisted on by Dr George Buchanan in his clinical lectures, viz., that the tibial tendons are not the real opposers of reduction, but rather the shortened internal part of the plantar fascia and the muscles immediately covered by it and the abductor and long flexor of the great toe. These parts were shortened from arrest of development in the child, and not from contraction of the muscles.

Dr George Buchanan said he had found it to be the best course in cases of talipes varus to cut down at the tuberosity of the scaphoid dividing everything down to the bone. Merely cutting the tibial tendons, or merely cutting the internal edge of the plantar fascia was not sufficient, for in the former case the tendons were only secondarily involved, and in the latter case the fascia was held together by the subjacent muscular fibres. He divided everything therefore down to the tuberosity of the scaphoid; the internal plantar artery was in the child so small as to be of no consequence.

Dr Macewen said he had found section of the tibial tendons sufficient in one or two cases.

Dr Finlayson referred to a case in Manchester which he saw with Dr Harvey, in which double club foot and club hand existed. In that case Dr Harvey was of opinion that Eschricht's view of the arrest of development being the cause of these deformities, was correct. The development of the foetus had been compared to the evolution or unfolding of a bud, and arrest of the unfolding led to deformities in after life.

Dr Thomas Reid showed two cases of GLIOMA. These tumours appeared at first as minute points in the connective tissue of the retina, and did not in the first instance affect the nerve tissue. In the first stage there was no

inflammation. The pupil was dilated, and there was a golden reflection. In the second stage there was distension; the eyeball was larger and greyer. In the third and last stage the eyeball ruptures near the edge of the cornea or elsewhere. Under the microscope the mass is a mere granular exudation; no nerve cells visible; the albuminous fluid was hardened and coagulated by the chromic acid. In both his cases he had enucleated, as there was possibly a trace of malignancy in the growth.

Dr Joseph Coats read Report of Committee on Dr George Buchanan's case of TUMOUR of the male mamma. The structure presented for examination consists of the altered male mamma, and is surmounted by an oval piece of skin in the centre of which is the nipple of the ordinary size of a male nipple. In the relative situation of the mammary gland there is a structure of a somewhat tough consistence, and considerably larger than the male mamma, the tissue extending somewhat into the surrounding fat. On microscopic examination this structure is seen to consist mainly of connective tissue, but it is penetrated with collections of epithelium. Some of these are pretty large, forming in fact tubes distended with epithelium which is often at the borders of the tubes, columnar in shape. Besides these, however, there are narrow elongated processes consisting of single or double rows of epithelial cells, which can be traced for considerable distances. Appearances are occasionally presented which suggest that these narrow processes may have originated or sprouted out from the larger collections. Although this is not typical of advanced scirrhus, yet the microscopic characters indicate that it is probably in an early stage of that disease.

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Original Articles.

I.—ON THE TREATMENT OF RHEUMATISM, ACUTE AND CHRONIC
BY SALICINE AND SALICYLATE OF SODA.

By SAMSON GEMMELL, M.B., AND FRANK SHEARER, M.B.

SINCE the publication of Dr Maclagan's papers on the treatment of acute rheumatism by salicine and salicylic acid, considerable attention has been paid in Professor Gairdner's wards of the Glasgow Western Infirmary, to the action of these and allied remedies, not only in acute rheumatism, though this is the affection to which chief attention has been paid, but in several other diseases, and through Dr Gairdner's kind permission, we are enabled to indicate the results obtained, chiefly during the past nine months, and to illustrate them with cases.

These drugs, as might well have been foreseen, have not achieved all that was predicted of them, and the danger is, in the shifting state of therapeutics, and the craze for new remedies, that they may be credited with too little value; while in reality, on careful observation, they will be found to form very valuable adjuncts to the treatment of disease. The literature of the subject is now very extensive, and scattered, as it is, through innumerable scientific journals, it is almost impossible to grapple with, but the allusions

which will be made, in the course of the paper, to results obtained in this country and on the continent, will serve to indicate to some extent the present bias of medical opinion on the question. It is our chief desire, however, to state simply what we have ourselves observed, but a very good *résumé* of all pertaining to the treatment will be found in a paper read by M. Sée, before the *Académie de Médecine*, and in the discussion which took place on it. These will be found in "*La France Médicale*" for July and August, 1877. There is also a very interesting series of cases, recently published in the St George's Hospital Reports (1874-77), by Dr Cavafy.

The preparations used in Professor Gairdner's wards have been salicine and salicylate of soda. In many cases they have been alternated, but, on the whole, the salicylate of soda has been preferred. The salicine, however, has been most easily borne, the salicylate of soda often producing so much gastric derangement as to lead to its omission. Both remedies have been given in powder, in water or milk, in doses usually of twenty grains, every hour or so, and the effect carefully watched, notes being kept of the temperature, of the general condition and sensations of the patient, and in some cases of the quality and characters of the urine. Large doses have, in several cases, been continued almost hourly for days, and although there has been occasionally considerable constitutional disturbance, at no time have the extremely irritant symptoms, noted by some foreign authorities, been observed. Notably at no time has there been hæmatemesis, although vomiting has been not infrequent. The cases chiefly selected for the treatment have been rheumatic, both acute and chronic; but pneumonia, enteric fever, and phthisis have also been made the subjects of experiment.

The following are notes of the rheumatic cases:—

CASE I.—*Acute rheumatism of eight days' duration: Treatment by salicine, with complete relief to pain on second day, and subsidence of the fever by the fourth: Convalescence steady and rapid.*

Andrew M'D., aged 24, labourer, admitted February 21st.

1877, with acute rheumatism—the knees, ankles, and shoulders chiefly implicated, much swollen and very painful. The disease was of eight days' duration, and there was a history of a previous attack, six years ago, from which he made a slow, but seemingly perfect recovery. The only treatment prior to admission was by liniments. At 6.30 p.m., on the day of his admission, the temperature was 101·8° F. At 8 p.m. on this date he had fifteen grains salicine, and this dose was continued every hour till 2 a.m. of the 22nd February, and thereafter twenty grains every two hours. On the morning of the 22nd, it is recorded by Dr Gairdner, that "the remedy produced no sickness, but seems to have had a remarkable effect in relieving the pain; the swelling is also decidedly less." The immediate apparent effect on the temperature was a fall of 2° F., for at 11.30 p.m. on the 21st February, 99·6 F. was registered, at 2.30 a.m. the same, and at 8 a.m. on the 22nd, 100° F. Patient was under the impression that the remedy made him perspire more freely, and he seemed to connect the favourable change in his symptoms with this fact. Four days after admission the temperature had fallen to normal. On the morning of February 23rd (second day of the treatment) all pain had subsided; while, prior to and on admission, he could not turn himself in bed for pain. Salicylate of soda was now substituted, and continued for some time, in less frequent doses, to guard against a relapse. None occurred, and the convalescence was rapid.

In a note appended to this case, Dr Gairdner says, "The first apparent physiological effect of the remedy was a very decided increase in the sweating. Soon after the commencement of the salicylate of soda, and the day following its first administration, patient complained of considerable headache, great sweating, and a degree of deafness and ringing in the ears, but there was no sickness, diarrhœa, or typhoid condition." He had in all 400 grains of salicine, and only once complained of being sick.

CASE II.—*Acute rheumatism of six days' duration: many joints affected: pain acute: Pericarditis: treatment by salicine*

and salicylate of soda, with complete relief to the pain in 24 hours : Hyperpyrexia treated by iced cloths : Convalescence uninterrupted.

Elizabeth A., aged 35, admitted April 4th, 1877, with acute rheumatism of six days' duration, attributed to getting her feet wet. There was a history of a similar attack nine years ago. All the joints, except the hips and shoulders, were swollen and painful, and there was acute pain in the præcordial region, and headache. On the night of admission the temperature was 103.8° Fah., and salicine in 20 grain doses was given every hour, but was changed after three or four doses to salicylate of soda; and although the temperature rose rapidly, till it culminated, on April 6th, in 106.2° Fah., all pain had completely subsided by mid-day of the 5th (24 hours after admission), and she remained quite free from pain, except a severe headache. Salicine was pushed in large and frequent doses, to watch its effect on the temperature; but as this gradually rose to hyperpyrexia, iced cloths to the abdomen had to be resorted to, with the effect of bringing down the temperature rapidly, and keeping it quite under control. She had in all 600 grs. salicine, and 200 grs. salicylate of soda.

During the treatment sweating was very profuse; she was intensely deaf; complained of much ringing in the ears, and there was occasionally some nausea. For a night or two during the high temperature she was delirious. It must be stated, however, that this case was complicated with pericarditis and evident effusion, and there was reason to suspect that this had something to do with the great height of the fever. By the 12th April (8 days after admission) the temperature had sunk to normal, and there were only slight modifications of it after that date. Convalescence was rapid. A mitral murmur, however, remained.

CASE III.—*Acute rheumatism: duration somewhat indefinite: painful swelling of many joints: Pericardial friction (?): treatment by salicine, salicylate of soda, and blisters: on seventh day pain gone, and temperature almost normal: Convalescence uninterrupted.*

Janet H., aged 22, nurse, admitted January 8th, 1877,

with rheumatic swelling of a number of joints of the lower limbs. The swollen joints were acutely painful. The history of the onset was a little vague, but she had no treatment till seven days prior to admission, when one ankle being badly affected, she applied flannel and poultices, and took a simple aperient. The day before admission all the joints of the lower extremities became implicated. There was a murmur following the first sound of the heart, its maximum intensity being in the basic region, and having many of the characters of an exocardial murmur, but not unequivocally so.

On the evening of admission the temperature was 103.3° Fah., and salicine, in 15 gr. doses every three hours, was prescribed. The temperature, taken six times daily, shows for the next two days an oscillation of about 2° Fah., and at mid-day of January 10th (second day) the salicine was ordered to be given every two hours, and some of the joints blistered, as the pain was most acute. On the evening of the 11th January (third day of treatment), there was a decided fall of the temperature to 99.3° Fah.; but on a slight exacerbation occurring on the 12th, the salicine was increased to 20 grs. every two hours. The temperature had sunk to normal in 40 hours, and the pain had much abated. By the 15th January all pain had gone, and patient felt quite easy. During convalescence pains occurred at intervals in the joints, but they soon disappeared on the administration of salicine or salicylate of soda.

The salicylate was only administered on six occasions, in twenty grain doses, but caused such intense nausea that at no time could it be persevered in. Salicine produced no apparent physiological effect except perhaps an increase in the sweating.

CASE IV.—*Acute rheumatism, with painful swelling of joints, of three weeks' duration: Four previous attacks: Cardiac complications: Treatment by salicylate of soda, with marked relief to pain and check to temperature: Supervention of typhoid symptoms and omission of salicylate: Pleural and pulmonary complications, with renewed febrile attack: Recourse to salicine with little effect: Death.*

David C., aged 23, hammerman, admitted December 20th, 1876, with acute rheumatism of three weeks' duration, and attributed to exposure. A history of four previous attacks, and from the symptoms described he seems to have had a cardiac affection dating from the first illness. The heart was much hypertrophied, and there was a double aortic murmur with much orthopnoea and thoracic oppression. Salicylate of soda was given in twenty-grain doses every hour, and the relief to the pain was decided and prompt. The temperature on the night of admission was 103.6° , but this was soon controlled by the drug, inasmuch as that from the 24th to the 27th December the temperature rarely exceeded 101° F., and often fell short of 100° . There was, however, a very great amount of typhoid lethargy, with dry brown tongue, and distinct delirium at night. The pulse at the same time ranged from 90 to 104, and a good deal of sweating accompanied the action of the salicylate. On the 20th December the medicine was omitted. The febrile movement afterwards increased, but this was probably due to the advent of pulmonary and pleural complications; and recourse was had, on January 8th, to salicine, in doses of ten and then twenty grains every three hours, but it had little apparent effect on the temperature, and its real influence on the disease being regarded as questionable, it was stopped on the 12th. The drug did not seem to cause any increase in the amount of urine, which, however, was always very acid and deposited urates. He died from increase in the chest symptoms.

CASE V.—*Sub-acute rheumatism : Treatment at first by potash salts : Trials of salicylate of soda on three occasions : Prompt and decided relief to pain on two of these occasions : No apparent effect on temperature or urine.*

Wm. M.M., aged 25, tramcar-driver, admitted December 27th, 1876. Dated his illness six weeks back, and attributed it to cold. He had pains in the shoulders, elbows, knees, and ankles, and on admission the knees were swollen. The treatment at first consisted in the administration of potash salts and liniments of soap and opium to the joints. Afterwards

salicylate of soda was tried on several occasions, but it was never continued to such an extent as to give the remedy a fair chance. Dr Gairdner notes, "On the whole the effect of the salicylate, though good, was not entirely satisfactory, but this was most probably due (speaking from further experience of the drug) to its being too spasmodically administered. The effect in almost all the trials was good, but it was not kept up in a proper manner." The trials referred to were three in number, and were made to meet severe pain in the joints. On each occasion six powders of thirty grains each were given—one powder every hour—and on the first and last occasions the relief to the pain was prompt and decided, while in the intermediate trial no result could be attributed to the drug. On the last occasion its action was attempted to be kept up, but the supervention of diarrhœa, profuse sweating, and ringing in the ears, led to its omission. The temperature never exceeded 101° , but the drug did not appear to exert any influence over it, nor did it augment the quantity of the urine.

CASE VI.—*Acute rheumatism of 12 hours' duration: great and increasing pain in nearly all the joints, with some swelling of the left knee: Febrile temperature: treatment by salicine, with complete relief to pain and check to temperature within a few hours.*

Catherine G., servant, æt. 19, admitted August 13th, 1877, complaining of severe pain affecting almost all the joints in the body. At eight o'clock on the morning of admission she was seized with shivering, and pain in her joints. She attributed this to having been exposed to draughts after a heat in the kitchen. The pain went on increasing up to admission, and was so severe that she would hardly allow herself to be touched. The left knee was somewhat swollen. Her face was much flushed; she was sweating profusely, and the pain was evidently very acute. The temperature at 7 p.m. was 100° , and at 10 p.m. 100.8° . She was put into blankets, and at 12 o'clock, midnight, twenty-grain powders of salicine were commenced every hour.

During the night she had one hundred and twenty grains of salicine, and on the morning of the 14th Aug. it was noted

—"pain almost completely gone; in patient's own words, 'just the least thing when she moves herself.' The temperature at 2.30 this morning was 100° ; at 5 a.m., 99.2° ; at 8, 99.6° ; now (9 a.m.,) 98.8° ."

She remained perfectly well from this date, but to guard against relapse, after the evening of the 14th, the salicine was given once every two hours; on the 16th it was decreased to one powder every four hours; and on the 18th one every eight hours—entirely omitted on the 20th August. It must be noted that on the day after admission a murmur, having its centre of intensity at the base of the heart, was discovered. There were no cardiac symptoms, however, and the characters of the murmur were not such as to enable us to say, with certainty, whether it was pericardial or hæmic.

The girl was conscious of sweating more freely during the administration of the drug; otherwise it did not seem to produce any symptoms.*

In looking over these cases, a fact that will at once strike the reader is the occurrence, coincident with the administration of the drugs, of a certain group of symptoms, due to the physiological action of the medicine. They are almost identical with those produced by quinine. One of the most constant is deafness, associated with a degree of *tinnitus*, and this is, as a rule, among the first indications that the system is being brought thoroughly under the action of the drug. To produce this effect, a single large dose, say 3i, or smaller doses frequently repeated, is required; and in the treatment of acute rheumatism, at least, it seems necessary for a good result that the physiological effects should be induced, to some extent, as soon as possible. A degree of headache, chiefly frontal, usually accompanies the deafness, and if the treatment is vigorously pushed it becomes intensely severe,

° *Note*.—The sequel to this case is interesting. On August 30th she had a chill, and there was a recurrence of the severe pains and swelling in the knees, ankles and wrists. She was at once ordered 20 grains of salicin every hour, with the effect of soon mitigating the pain, and on the morning of September 1st there was only a slight degree of it on movement. It was entirely gone by the 3rd. The temperature never much exceeded 100° F. She is now (Sept. 7th) quite well, but the drug is continued three times a day, and she is kept in bed to guard against another relapse.

and associated with a dusky flush on the face and suffusion of the eyes, not unlike the physiognomy seen in pneumonia or typhus fever. In two of the cases there was a degree of delirium, and it is questionable whether this may not have been due, in at least one of the cases (Case II.), to the toxic influence of the drug, although it may also be open to the interpretation of having been produced by the pericarditis, and highly febrile condition which existed. In the other case (Case IV.), it seems reasonable to attribute the delirium to the complications which were present. M. Séé, in the article already referred to, says he has rarely known the salicylate produce any intellectual disorders or visual illusions analogous to those of quinine or *mal de mer*.

In rheumatic cases a very frequent symptom is increase in the sweating. This does not seem to be met with where the drug is given in health, for the purposes of experiment; but it is certainly not peculiar to the rheumatic diathesis, for in pneumonic and phthisical cases treated in the same manner it has also been a marked feature. In four of the cases this profuse perspiration was well seen, and one or two of the patients attributed the improvement in their symptoms to this fact; but this is subject to grave doubt when we remember how rarely any relief is obtained from the frequent and drenching sweats which are so common in the disease. A fact worthy of note is, that the sweat usually becomes alkaline or neutral, and Dr Sidney Ringer, in a recent contribution in the *Journal of Anatomy and Physiology* (Vol. XI., page 589), speaks, hesitatingly however, of the urine becoming neutral, or less acid, but this does not accord with the few observations we have made. Diuresis is occasionally met with, but this action is very uncertain. Vomiting or nausea was occasionally produced, especially by the salicylate of soda, and, in one or two instances, diarrhœa; and if either of these symptoms are urgent, the drug must be withheld, but in many cases they pass off without this, as the system acquires a tolerance. When the treatment is abandoned all the physiological symptoms rapidly disappear.

In the healthy subject, salicine, according to Dr Sidney

Ringer, whose observations confirm those of continental experimenters, produces only a slight variation in temperature. In cases of acute rheumatism, it is said almost invariably to determine a fall, provided there are no inflammatory complications; for where these are present it does not check the ascent of the temperature. In our cases the effect on the temperature was neither very sudden nor pronounced, if we except Case VI.; but on the whole the evidence points to the possession of considerable antipyretic powers, though it must not be expected in every instance. In Case I. the immediate apparent effect of the remedy was a fall of 2° F., and the febrile temperature had quite subsided by the fourth day. In Case IV. the excess of temperature was also controlled to a great extent. In Case III., however, there was no effect on the temperature, which rose in spite of large and repeated doses to 106.2° F., and other means had to be adopted for its reduction. Again, in a case of acute pneumonia, where the temperature rose to 104.6° , salicine was pushed in large doses, but failed to make any impression. In a case of phthisis, however, where there were persistent evening exacerbations, these have been almost entirely controlled by a twenty-grain dose of the salicylate of soda taken late in the afternoon. In France and Germany the effect on the temperature in enteric fever has been investigated to some extent, and in this disease not only might it act as an antifebrile agent, but have also some antiseptic properties. This point requires further observation, and we hope to see the enquiry taken up at the Glasgow Fever Hospital.

The question as to what extent acute rheumatism is amenable to the salicylates can hardly be fairly settled by the observation of hospital cases, as they are admitted at a period when the disease has usually become associated with other conditions over which the remedy may have little effect. It is, as Sir William Jenner remarks, chiefly to private practice, where the disease is seen in its earliest stages, that we must look for crucial experiments. In this light Case VI. of our series is very instructive. If it was, as it certainly seemed to be, a genuine example of acute

rheumatism, then it must be confessed that the result was satisfactory in the highest sense. It was got in the earliest stage, the onset only 12 hours prior to admission, the development was acute, the pain exquisite, and yet every symptom was dissipated in the course of a single night, and the temperature brought down to the normal standard. Other observers have published similar results; and it is to be hoped that those who see cases under like favourable circumstances will be induced to give the treatment a trial. But, laying aside the question of the action of the remedies on the disease as a whole, there is one symptom, viz.—pain, over which they seem to have special control; and if they had no other effect than this, they would be entitled to take a front rank in therapeutics. Their action in this respect is much more rapid and satisfactory than quinine. In Case I. the relief was complete on the second day; in Case II. in 24 hours; in Case IV., quite decided by the fourth day; and in Case VI. the relief was almost immediate. In cases III. and V. the relief, though marked, was neither so prompt nor decided; but this may have been due to the fact that the remedy was exhibited in too small doses, and in too irregular a manner. Nearly all observers are at one in regard to the marked relief afforded to pain. But it is not only in the acute disease that this is seen; it is often quite as marked in the chronic form. Thus, in a case where the pains had existed for six weeks, and caused much suffering and sleeplessness, they were totally relieved in 12 hours by 20 gr. doses of the salicylate of soda every hour, only slight stiffness remaining. In a second case of chronic rheumatism, where pains were acute, especially on movement, in the shoulders and ankles, recourse was had to the salicylate. Next day it is noted, "pain greatly dulled," and on the following day it had quite disappeared. The dose was then reduced to thrice daily; but, owing to exposure to cold, the patient had a relapse. He was quickly brought under the influence of the drug, the pain dispelled in six hours, and there was no return of it. In a third case, of 30 days' duration, which had resisted the action of blisters and friction, it is noted

that the pain had greatly abated by the third day, and by the morning of the fourth she was "perfectly painless." It must not be expected that such happy results will be obtained in all cases, but in many it will succeed, and dispense with the painful and disagreeable treatment by blisters and otherwise.

We have not attempted to formulate any number of days in which the cure of acute rheumatism may be effected by salicine and the salicylates, although there has been a tendency in this direction. It seems, however, likely to lead to disappointment and misapprehension. What seems clear is that the drugs should not be administered timidly, but vigorously pushed to the production of their physiological effects, to give them a fair and thorough trial. Cases will occasionally turn up where none of the preparations will be borne, but as a rule, for an adult at least, 20 gr. doses every hour or so may be commenced with, and the dose lessened when the constitutional effects are well produced. A fact of importance is that the treatment should not be discontinued too soon, as relapses are apt to occur; and to guard against them smaller doses, or larger doses less frequently repeated, should be given for some time. We have nothing to offer as to the effect of the medicines in preventing complications, especially cardiac ones, but the conclusions formulated on the whole subject by M. Jaccoud, from observations on a series of cases, seem so sensible, and accord in so many points with our own, that we do not hesitate to quote them, somewhat abridged. They are—

1. In acute febrile articular rheumatism, free from all complications, salicylate of soda is the most powerful therapeutic means which we possess; it cures more rapidly than any other.

2. It is impossible to assign to the treatment a uniform duration of days.

3. It does not prevent the cardiac, pulmonary, and cerebral complications of acute rheumatism; and where these exist prior to the treatment, it has no effect on them.

4. In spite of its antipyretic properties, it does not hin-

der the ascent of the temperature, which announces the advent of visceral complications.

5. In acute rheumatism, with slight complications, it is well to push the salicylate for its antipyretic and analgesic effects, but the use of revulsives should not be forgotten.

6. In acute rheumatism, with grave complications, it is well not to rely on the salicylate alone, but also to have recourse to other medicines.

II.—NOTES OF CASES OF NERVOUS DISEASE.

By JAMES FINLAYSON, M.D., *Physician and Lecturer on Clinical Medicine to the Glasgow Western Infirmary.*

II.

RETINITIS OF BRIGHT'S DISEASE AND CEREBRAL COMPLICATIONS.

THE occurrence of a definite affection of the retina in certain cases of chronic disease of the kidneys is now well known, and indeed very generally recognised. Apart, however, from the double interest attaching to such cases—viewed from the ophthalmic and the renal standpoints—there is a further reason for the careful study of complications of this kind. As has often been remarked, we are able, by means of the ophthalmoscope, to see changes occurring in the nervous tissue, and by the study of these we may gain some information as to changes occurring in regions beyond the reach of our vision. It is from this point of view that the following cases are reported.

In both patients the renal disease was of old standing, and in both of them the clinical facts pointed essentially to the variety of renal affection most frequently associated with this form of retinitis, viz., interstitial nephritis, characterised by granulations on the surface of the kidney, and by a great development of intertubular fibrous tissue. In the first of these two cases, this was actually found at the dissection. Both cases presented likewise clear evidence of cerebral lesions. In the first, indeed, the only symptom pointing in this direction was the occurrence of diplopia, due to paresis

of the external rectus muscle. As this was but of short duration, and as it passed completely away, no great reliance could have been placed on this as an evidence of cerebral lesion, but the *post-mortem* examination revealed two small clots, one in the cerebellum and the other in the Pons Varolii. In view of Ferrier's localisation of the ocular movements in the cerebellum, the seat of these clots was noted with some care by Dr Joseph Coats, but I only refer to this in passing. Whether these clots were the cause of the diplopia, and of what importance they may have been, we need not here inquire. The second case (in which the *post-mortem* examination was not obtained) presented the most typical history of an attack of hæmorrhagic apoplexy, with loss of consciousness rapidly supervening, and with hemiplegia of some duration. Here again we have evidence of cerebral hæmorrhage. On ophthalmoscopic examination of both patients, in addition to the white spots and patches so characteristic of Bright's Disease, the retinæ were found to present very distinct hæmorrhages. These hæmorrhages were not present in the same form at all the examinations. Such variations as to the presence and number of hæmorrhages seem to be not unfrequent in this affection.

With regard to the relative date of the retinal affection in these patients, it should be noticed that in both it only appeared towards the end of the renal illness; if, indeed, we may rely on the state of the vision as a guide. In the first case the progress of the affection may be said to have been watched from the beginning. But in the second case the vision seemed but little impaired, although the affection of the retina was very marked, and it was only just at the end that the patient complained of blindness. The latency of both ocular and renal symptoms in such cases is frequently most striking. In our first case, for example, although he was far advanced in renal disease, we find the patient applying for medical advice chiefly, or rather exclusively, on account of his eyes; in the second case, we detected extensive disease of the retina when the patient made no complaint of his vision, and when, indeed, it seemed pretty good. In the

first case the retinal affection was associated with cerebral hæmorrhages of the minutest character, both lesions probably appearing about the same time. In the second case there had been considerable cerebral hæmorrhage occurring more than a year before the vision became affected; the cerebral lesion had evidently undergone a process of repair before the retinal disease appeared. As to the exact nature of the lesions in the retina, it will be noticed that an accident led to the specimens being spoiled for microscopic examination.

CASE V.—*History of spirit-drinking formerly, recently quite temperate: Inflammation of kidneys and dropsy eight years ago: Occasional attacks of rheumatic pains since, last one two months ago: After this, transient diplopia from paresis of external rectus, and retinitis rapidly developed: Great increase of dyspnœa thereafter: scanty and highly albuminous urine: slight dropsy: hypertrophy of heart: hæmoptysis, pericarditis, and death.—Post-mortem: Interstitial nephritis: Two small clots in the cerebellum and Pons Varolii: lesions of heart and lungs, &c.*

This man (N. M.D., æt. 38) was sent to the Western Infirmary on Oct. 19, 1876, by Mr Clark, under whose care he had been at the Eye Infirmary. The history pointed to a period of excess in the use of spirits about eight years ago, when the patient kept a public-house, but for the last few years he had been quite temperate, having abandoned this trade to work as a machinist. About eight years before admission, likewise, he seems to have had an acute renal affection, called by the medical attendant indeed, "Inflammation of the kidney;" there was some general dropsy, and the urine was said to be affected, and ever since then there has been a certain frequency in micturition, but no return of acute symptoms. Since this illness rheumatic pains frequently troubled the patient, often attacking the feet and toes, but not by any means limited to these joints. Such an attack had occurred two months before admission, and the affection of the sight seemed to date from that time. On admission there was almost no dropsy: the urine was scanty and highly albuminous; the largest quantity noted during his residence was 24 oz. in the 24 hours; the specific

quantity varied from 1012 to 1015; the quantity of albumen as estimated by Dr Roberts' dilution method, ranged from 60 to 100 degrees; the lowest was in the case of a sample of 16 oz. passed at once, the day before death, this showed 50 degrees. The urine was bloody, and the sediment contained a large number of hyaline casts, some of large diameter, along with much fatty epithelium and compound granular corpuscles.

His admission to the Western Infirmary was advised on account of increasing dyspnœa. Two days before admission he had begun to spit blood, and there was evidence of consolidation in the right lung: the heart was also hypertrophied, and the arteries rigid: his complexion was pallid, and extremely unhealthy in appearance. The dyspnœa increased, some dropsy of the legs appeared, and pericarditis supervened two days before his death on October 26. The renal history seemed to point to a combination of the parenchymatous and the interstitial forms of nephritis.

The ocular part of the trouble appeared about two months before his death; it began with double vision; the patient alleged that there was double vision with his right eye, but as Mr Clark saw him at this time at the Eye Infirmary, and determined the existence of paresis of the right external rectus, the diplopia was no doubt due to this. This paralytic affection passed off in about a week, but the patient next complained of dimness of vision in the right eye, and on ophthalmoscopic examination, Mr Clark found well marked retinitis, without exudation: the left eye then became affected, and neuro-retinitis, with white glittering exudation patches were seen, but no hæmorrhages. After admission to the Western Infirmary his vision was tested, and he could read No. 12 (Snellen), on Oct. 22, and on ophthalmoscopic examination, in addition to the white spots mentioned, several hæmorrhagic spots and patches were seen. The paralysis of the ocular muscle did not return.

The *post-mortem* examination was made by Dr Joseph Coats. Permission having been obtained to examine the eyes, they were removed and placed in fluid to be hardened.

Unfortunately, however, separation of the retina took place, and destroyed this part of the investigation.

Lesions in various organs were found, which need only be mentioned: effusion into the pleuræ, œdema of the lungs, lymph in the pericardium, and great hypertrophy of the left ventricle of the heart, without valvular lesion. The kidneys were about the normal size (left 5 oz.): the surface was finely granular, and dark red in colour, and the cortex much reduced in thickness. Under the microscope a very extensive interstitial infiltration of round cells was found in some places, these cells were elongated, presenting a transition towards connective tissue. In the cortex the tubules were found dilated, and the epithelium granular.

On examining the brain, two small clots of a dark red colour were found; they were each about the size of a pea. One was in the cerebellum, occupying the middle line, in the grey substance of the extreme lower and anterior part, immediately over the fourth ventricle, just at the angle of the inferior and anterior surface of the cerebellum. The other clot was in the extreme posterior part of the Pons Varolii, just to the left of the middle line.

CASE VI.—*History of free use of spirits: A year before admission apoplectic attack with right hemiplegia, and at same time swelling of feet, and albuminuria, from which he recovered: On admission marked signs of chronic renal disease: retinitis without much affection of vision at first: Convulsion, dropsy, hypertrophy of heart, and congestion of lungs: Death: No inspection.*

A cabman, age 29 (Wm. O'B.), was admitted to the Western Infirmary on December 18, 1876. He had a peculiar tremor of his lips of old standing, and he gave an account of some nervous fits when he was a child, but neither of these facts seemed to be related to the present illness. In connection with his occupation he had been in the habit of using stimulants freely for some years. He had smallpox four years ago, and after this he had some swelling of the feet, but this was transient. About a year before admission he had a fit, followed, in two hours, by loss of consciousness,

and there was paralysis of the right side: he was admitted to the Royal Infirmary at that time, under the care of Dr Scott Orr: his urine was then albuminous, and hyaline casts were found in the sediment. There was swelling of the feet and legs while he was resident in the Royal Infirmary, and he had noticed it occasionally since midsummer, although he had recovered so far from his paralysis that he had been able to resume his work. He had been frequently troubled with "bilious attacks," and occasionally of late with pain in the lumbar region. The complaint from which he specially sought admission was frequency of urination: this troubled him chiefly at night, and the quantity passed at night was considerably greater than that passed during the day. This statement of the patient was verified after admission. The quantity passed in the twenty-four hours was large, amounting to 70 or 80 oz., as a rule. The specific gravity was seldom over 1014, and occasionally it fell to 1007, or even 1005. The amount of albumen was considerable, but this and the specific gravity, as well as the colour, varied much in the different samples passed during the course of the day. Thus the quantity of albumen varied in one day's samples from 100 degrees of Roberts' scale, to 17 degrees; and the specific gravity ranged on the same day from 1022 to 1009: similar differences in the colour were also noticeable. The sediment contained an abundance of tube casts, chiefly granular, and many white cells resembling pus corpuscles. In addition to the urinary troubles, and to the dropsy, which was very slight on admission, the patient complained of breathlessness and of cough: for some days he had been spitting up a little blood. The heart was greatly hypertrophied: there were numerous râles at the bases of the lungs: the arteries were rigid and tortuous, and the sphygmographic tracings showed great increase of the arterial tension. A slight difference in the power of the right arm was all that remained of the paralytic attack. The vision was but little impaired. This could not be tested so accurately as was desired, as the patient could not read, but he was tried with Snellen's plates, with spots and

lines. The eyes were examined ophthalmoscopically on January 25th, and again on January 28th; on the latter occasion by Dr Reid. Numerous white patches were seen on both eyes, situated chiefly between the macula lutea and the optic disc, and there were likewise a few bloody spots. Dr Reid found a degree of hypermetropia in both eyes, amounting to about $\frac{1}{16}$, but over the discs this was considerably greater, about $\frac{1}{8}$ in the left and $\frac{1}{6}$ in the right.

The treatment, which need not be detailed here, failed to produce any permanent benefit. The patient's condition became, on the whole, distinctly worse after admission, although there were occasional ameliorations. Attacks of dyspnoea, sometimes apparently of cardiac origin, and sometimes connected with pulmonary congestion, became severe, and frequently threatened his life. On February 2nd a convulsive fit occurred, associated with unconsciousness, lasting a short time. Vomiting became extremely troublesome, and the dropsy increased. The impairment of vision became much more marked. As the patient was dying, he desired to go home (Feb. 24), and Dr John Wilson, into whose care he passed, informed me that he died in a few days, with some slight approach to convulsive attacks.

III.—ON LEPROSY IN CHINA.

By JOHN DUDGEON, M.D., etc., *Pekin.*

THE question of the production and propagation of leprosy is one of great difficulty, but of much interest to our profession. The very laudable effort lately put forth for obtaining a better knowledge of the endemic skin diseases of India, and the general results, recently published by Drs Fox and Farquhar, containing replies from members of our profession all over the world, leave little, perhaps, to be further desired. We have, in this work, the results, in a very brief form, of some three medical men in South China. Special prominence is bestowed upon lymph scrotum or elephantiasis of that organ, which

has been witnessed largely at Amoy and Canton, from which latter city it was first and correctly described many years ago. An article appeared in the *Medical Times and Gazette* of June 2nd, 1860, on Chinese Leprosy, by the late Dr Hobson, for many years an eminent medical missionary in Canton; but I have not had an opportunity of consulting it. Press of work prevented me from replying in time from my district (Pekin), to the questions submitted in behalf of the Indian Government, regarding leprosy and skin diseases generally.

Origin.—So far as I know, it is indigenous in China, and has not been derived from India, the West, or elsewhere. There was a very early intercourse to and fro between China and the West, both through Central Asia, India, and by sea, and although much of Western knowledge, productions, etc., were thus introduced into China, we find no mention of leprosy as having been imported or so propagated, and the name for leprosy in Chinese, so different from the substances generally introduced from foreign countries, throws no light upon the subject. We know, positively, that it existed in China in the seventh century, for the books tell us of a celebrated surgeon of that time who had treated unsuccessfully over 400 cases. These proved fatal, it is said, not from his inability to cure the disease, but from the inattention on the part of the patients themselves, who, contrary to his orders, partook of such articles as salt fish, pork, beef; horse, donkey, and mule flesh, etc. The Chinese name for leprosy is *ta-ma-feng* or *lai*. The latter term is more frequently applied to mange in the canine race. *Ma* is hemp. The *cannabis indica* was known and used in the third century for its anæsthetic properties, and the character *feng*, containing as it does the character *insect*, indicates the supposed causes of the disease—a widespread notion existing in China that such diseases are caused by insects or worms. We may therefore say that leprosy, in the absence of more definite information, has been known in China from the earliest times. A colony of Jews was found in the very centre of the country, who seem to have migrated thither at a very early

period, if we may judge by their possession of parchment rolls containing the Pentateuch only, and to have become stationary there, and refrained from marrying with their Gentile neighbours. We have not heard of its existence among them, and where it most prevails is far removed from them. Nor do we think that the introduction of Buddhism in the first century had anything to do with the propagation of this disease. The Chinese medical works trace all diseases, unless their introduction from abroad is historically decided, to the great Emperor Hwangti, and his minister Chipu, who are supposed to have written the Neiching (2600 B.C.), or medical classic, invariably quoted in all subsequent works. Further investigation into the origin and history of leprosy may bring something to light. Books on the history of leprosy, and on the origin of Diseases, exist in China, but the assiduity of book collectors, and the offer of a high price, have not, as yet, resulted in placing copies in my hands.

Varieties.—Both the anæsthetic and the tubercular varieties exist in China. The Chinese division into wet and dry leprosy very nearly corresponds to the above, and the terms explain themselves. In the anæsthetic form, the numbness varies from mere loss of perception of tactile impressions up to absolute loss of sensibility in the affected parts. These latter parts never perspire. Among 121 anæsthetic cases seen at Hankow, in 10 of the cases the sensory was found combined with motor paralysis, and in 2 cases with paralysis of the facial nerves. In some of these cases, simple anæsthesia had existed for 5 years. In all the cases lasting over 10 years, it was always found accompanied with wasting, paralysis, and ulceration. The anæsthetic cases naturally divided themselves into two groups—those with simple impairment of the nervous sensibility, and those that had, in addition, some eruption or wasting and shrivelling of the skin and sweat glands, and the decadence of the hair, eyebrows and eye-lashes. In the tubercular variety, besides the above symptoms, there was in addition a local, morbid deposit in the affected parts. We shall not attempt, in this place, to describe the various symptoms and pathology of

the disease: the bronzed appearance of the face, which is particularly striking, with the thickening and ulceration of the skin of the affected parts, the necrosis of the phalanges, pink injection of the conjunctiva, the impairment or complete loss of the sense of smell, etc., are too well known to be mistaken when once seen, and are to be found detailed in our medical treatises. The anæsthesia is, doubtless, dependent upon the presence of the leprous deposit, in or near the roots of the sensory nerves, and the tubercles to similar deposits in the subcutaneous cellular tissue. This explains both the characteristic ulceration, and its resistance to treatment. The disease invariably begins with anæsthesia, belongs to adult life, is extremely slow and chronic in its progress, and scarcely *ceteris paribus* can be said to shorten life or affect the general health, and it never relaxes its hold upon its victims. It seems to arrest development and retard puberty. Leprous women suffer invariably, or almost invariably, from amenorrhœa or leucorrhœa, although, for various reasons, both these affections are exceedingly common among China women. It does not, for a long time, incapacitate for work, and is first noticed as giving a smooth, shining aspect to the features, which subsequently, as already stated, are greatly deformed by hypertrophy of the skin, and falling off of the eye-brows. The anæsthetic form most closely resembles progressive muscular atrophy, both being hereditary, or developed by mal-nutrition, and the progress towards a fatal termination very slow, lasting, in many cases, twenty or more years.

Prevalence.—It prevails most extensively in the south of China, and is found especially along the sea coast and great rivers. Large numbers are seen at Canton. In the province of this name it is estimated there may be 10,000 lepers. There are, of course, no reliable statistics; but in every village of 800 to 1000 inhabitants one or two lepers may be found. Many of the lepers live promiscuously among the people in the provincial city, as the law enforcing segregation is not strict. At Swatow, further north than Canton, and also on the eastern seaboard, 153 lepers were under

treatment in 1874, being nearly a half more than in the previous year. At Amoy, still further north on the coast, seven per cent. of the hospital patients apply for the cure of this disease. In one of two leper asylums at Foochow, still going north, near the sea on a great river, there were in 1859 about 400 inmates, one-fourth being females; and there were 30 or 40 children of both sexes who were affirmed to have been born there. One of the inmates said he was only 18 years old when taken there, and had been in the asylum for 54 years. Fifty-seven cases were seen in one year at the London Mission Hospital at Hankow, an important, thriving emporium several hundred miles up the great river Yangtse, and of these 55 were males, and only two females. Only two of them had been born and bred in cities; eight others had lived in towns, shortly previous and subsequent to the onset of the malady; the large remainder were from low-lying, malarious districts and hamlets; and the predominating class, all except 30, were from among agricultural labourers. In another year, at the same hospital, no fewer than 121 cases of anæsthesia and 73 of leprosy were seen. The former were considered the incipient stage of the latter. The ages of the former class ranged from 18 to 63, and were chiefly of the male sex, some 10 or 12 only being women—and of the latter only 2; and the majority of the patients were agricultural labourers. Mr Porter Smith, during his first year (1865), at Hankow, in connection with the Wesleyan Mission, saw at his hospital, or met with on the street, some 200 or 300 lepers. Numerous cases of local anæsthesia have been seen at the Pekin Hospital in the extreme north; and although all such cases might have been suspected, in the centre or south of China, to be of leprosic origin, still, I think it will be found in the north perfectly independent of that affection. True, tubercular leprosy is all but unknown; but the people in spring, and especially in autumn, suffer greatly from rheumatism or neuralgia, with more or less of anæsthesia, caused by exposure to our frequent changes of temperature and by their habit in the warm weather (with cold nights or early mornings), of sleeping on the ground, in the

courtyards, under the eaves, on their cold earth bed platforms, and, as in the case of the Mongol, all the year round, in their tents. Very many have attributed their *mamu*, or loss of sensation, to these causes, and so we find them amenable to diaphoretics, liniments, etc. I have seen at Peking a few very suspicious cases—two or three *bona fide* cases of the tubercular form are detailed at the end of this article—where the eyebrows were nearly gone. The Chinese have very little hair on their face, and the hair of the eyebrows is very sparse, especially as to the outer edge. As they did not complain of anæsthesia, and the affections of the skin were probably referable to syphilis, which they acknowledged to have had, they were classed accordingly. Psoriasis, with its varieties, according to the Chinese, ox-hide, fish, and serpent skin, is remarkably common, and, in some cases, might be mistaken for leprosy.

Causes of Leprosy.—Leprosy is either of spontaneous origin, or it is propagated. The two causes are supposed to be about equal—observers inclining to the view of the former probably predominating.

On the Propagation of Leprosy.—(1.) *Intermarriage.*—This exists to a limited extent. Lepers do not intermarry with the healthy, but the disease sometimes breaks out after marriage. The children nearly all exhibit the disease. As a rule, it is stated that the disease loses its severity in each succeeding generation, and in the third generation the disease is seldom visible, and in the fourth it is considered quite safe to intermarry, though not generally done. So long as marriage is confined to lepers, there is a tendency to natural extinction of the disease. It is propagated (2) also by *hereditary* transmission. Family taint favours its development; one or two in a family may be affected, while the others are healthy; or one alone of several children may be attacked, and although a leper's descendants are, in general, free in the fourth generation, the disease sometimes re-appears in one or two individuals. It is difficult to estimate the value of this factor in the propagation of the disease. The people themselves all admit its hereditary character, but if both

parents are lepers, the race, they believe, becomes extinct in three generations. In this respect, it resembles the condition brought about by opium smoking, and other transmissible disorders. The offspring of a leper, married to a non-leper, retain the power of propagating both their species and the disease. Out of 27 cases seen at Shanghai, in 11 months, there was a family history only in two. Lepers, by descent, are necessarily confined to those with the mildest form, as in the most severe forms existing before puberty the generative organs remain undeveloped. This is fortunate for mankind, as operating against the multiplication of lepers. When the disease is established later in life, the sexual functions are weakened, and soon destroyed. The sons of lepers, therefore, are usually born when the disease is latent, and may escape or have it in a very mild form. No case of both parents affected was met with at Hankow, and only five children having one leprous parent were seen. One indicated wasting, and the others were under the age when leprosy appears in a marked manner. The weakening of the reproductive power, therefore, assists in explaining the limited and stationary number of the population affected, although surrounded by all the conditions favourable to its development. Social custom moreover, is against the union of such as still retain that function, and the law mentions leprosy as one of the reasons for divorce. A third form of propagation is by cohabitation and inoculation. This brings up the important question of the contagiousness or non-contagiousness of the disease.

On the whole, the Chinese regard it as contagious. Lazar houses and leper villages exist extensively in the South—in the centre and North, none are found. Local laws exist with regard to them, regulating their intercourse and marriage with non-lepers. These measures, however, are perhaps owing more to the loathsomeness of the malady, and a desire to shun its victims, than to any real belief in its contagious nature. At Hankow, one witness asserts that it is positively regarded as non-contagious, and

lepers mix freely with the people in the streets and shops as small tradesmen; that laws exist with regard to them, but that they are not enforced. Another from the same part remarks, "in his being obliged to repel them from the hospital on account of the incurability of the disease, and the objection evidently felt by the other patients to have any close contact with these poor outcasts." At Canton the patients with the mild variety can mix freely, so long as it is not well marked on the face. The allowance from the Imperial exchequer being insufficient, the lepers beg about the streets. As soon as the malady appears in an individual, he is immediately separated from his family, and driven forth to feed with others of the same disease, and live on charity. Those who cannot get into the lazarettoes are obliged to live in a different part of the city. The head men of these asylums, not unfrequently lepers themselves, have to report, at stated times, to the district magistrate, the number of deaths, accessions, etc. Husbands and wives are allowed to live together. They are allowed to marry among themselves, but on account of poverty and other causes, they do not often do so, and the hardships of their lot soon end their days. Marriage is forbidden between lepers and non-lepers. The neighbours will not allow a person attacked with the disease to remain at his own home—he must be taken to one of the lazar houses. In the case of the very poor, the neighbours are glad to raise the sum demanded by the head man for admission, in order to facilitate his departure. Good families, to prevent it becoming known, frequently confine the leper at home. There is a physician attached to some of these lazar houses who lives beyond the compound. A school also exists for the separate education of the children. At death, the corpses are burned, not buried. In this way the supposed leprous insects are destroyed. The leprosy not always appearing in their children in early life, the relatives outside the asylums sometimes take them home to bring them up.

These views and practices favour the belief of its contagiousness. Were it so, however, we should readily believe

that from the dirty habits of the people, from the discharges and the overcrowding, etc., leprosy ought soon to include the entire population. Where it has broken out in persons not hereditarily disposed, is no proof of contagion. Where the disease has been endemic for centuries, we should have expected a much wider propagation on the hypothesis of its being contagious. Only two foreigners have been known to take it, although living in the country and exposed to its influence, and we may suppose Europeans to be more susceptible to the contagion than the natives, with whom it is always endemic. One is mentioned by Erasmus Wilson, who contracted it after a fourteen years' residence at Hong Kong. The other is mentioned by Dr Wang of Canton, and is so interesting that we make no apology for giving the particulars of the case. This foreigner had lived over thirty years in that part of China, was of very dirty habits, and was much in contact with the natives. In his house he had a native assistant who had leprosy, and he was advised of the danger. Not believing in contagion, he kept the leper in his employment for nearly five years, and was often in very close contact with him, eating frequently together, and sleeping in the same room of the small boat when up country. He often lived on Chinese food. His assistant was first attacked in his feet, and when it broke out in his face he was sent away. About this time the European was attacked in his feet, and the Chinese attributed it, not without reason, to infection. This was in 1864; he left for home, where he died of old age and leprosy in 1871, 68 years of age, and before his death he had lost some fingers. The wife of another native assistant, also living in the same house, was also attacked with leprosy. As the Chinese believe it to be contagious, inoculation from leprous discharges is not likely frequently to take place among the healthy, except through cohabitation. Although all do not live in the leper villages and lazaret houses, but some in the cities, still there is even there a certain amount of isolation—this dread of catching the disease acts, therefore, beneficially in preventing excessive spreading of the disease. Among the better informed,

ordinary contact is not believed to be contagious; but all firmly believe in infection through cohabitation, and this is supposed a powerful cause of the extension of the disease. It is very difficult to settle this question whether cohabitation is really contagious. The statement that it is not communicated by sexual congress ought to be received with great caution. Among married people one may have the disease many years without infecting the other. There are numerous reliable cases of this sort. On the other hand, exceptional cases occur showing the reverse condition, the healthy wives of leprous husbands exhibiting marks of the disease; but neither prove nor disprove the question of contagion. That every one cannot be affected is no reason why some may not suffer. We have a case reported of both parties contracting the disease after marriage; and one reliable case where the husband first had the disease, and the wife afterwards. The Chinese believe that cohabiting with the wives of lepers, showing no marks of the disease, is capable of infecting healthy people, and sooner or later is followed by leprosy. At Foochow they have a popular saying, that either husband or wife having the disease, the other will not take it; that a male leper cannot impart it to a woman, while a female leper can give it to a man not her husband. There is another belief, that mild forms can be got rid of by sexual connection with healthy men, and hence arises the pernicious custom of "selling off the leprosy," as it is called, the women by clandestine and gratuitous prostitution trying to get rid of their poison. If leprosy be communicable, as they believe, this may be a prolific means of propagating the disease, and many cases are attributed to this origin. Cases are reported in this way where leprosy has broken out in two or four months after cohabitation. The frequency of an attack of leprosy after cohabitation in healthy persons with no family taint, has given rise to the universal belief in infection. When several are so affected from the same woman, the probability is, of course, very much strengthened. This infection through cohabitation would

account for people, in good circumstances and with no family taint, being attacked with the disease.

Besides the propagation, there is also the *production* of leprosy, or its spontaneous origin, and first in importance comes the question of malaria. The Chinese are unanimously of opinion that it is caused by the exhalations from low, damp localities. The books and doctors all agree in this. And yet we know well that mere malaria does not produce the disease; even in leprosy countries the two poisons bear no relation to each other. In some places in China where paludal fevers are quite common, leprosy is much less prevalent. I have seen thousands of cases of ague in the North in which no trace of leprosy could be detected, and in the South this is still more striking, where the malarial cachexia, anæmia, and enlarged spleen are very common. Lepers assert that before the accession of their distressing malady they were not subject to frequent attacks of intermittent fever. The disease does not seem to attack merely or only the weak, disabled, and those under malaria. It is found among all classes of the people, although most commonly met with among the agricultural and labouring poor. In ten or twelve cases seen at Chefoo, in the North on the sea-coast, damp as a cause was traced in two cases; one man slept in a wretched hut by the sea-shore, where the floor was constantly wet, and he began to improve on removal to a dry locality; the other traced his affection to a soaking in harvest-time, when heated by overwork. This patient lives, however, on a hill-side, where wet weather is exceptional. Family taint was denied in all the cases. Both ague and leprosy have been supposed to be generated by marshy influences, for both have disappeared *pari passu* from Great Britain, the first certainly, the other probably, under our improved system of drainage. Imperfect tillage and culture of the land furnish the essential conditions for the development of the paludal poison. In China the land is everywhere highly cultivated and manured, and this has been carried on for many long centuries.

At Hankow, where large numbers of cases of both the anæsthetic and tubercular varieties have been seen, only one of

the patients out of nearly 200 cases belonged to the town, which is well known to be yearly inundated by the great river Yangtse. The natives of Hankow are reported as free from both ague and leprosy, and this is said to depend probably on the sandy nature of the subsoil which renders drainage easy and quick. The outlying districts are of stiff, tenacious clay, with pools of water, and full of both animal and vegetable life. It is said that leprosy and ague rarely or never affect the same individual.

Were leprosy produced from malaria, or any special specific cause, we should expect it at certain times to be more general. Strangers should be more amenable to the disease than those thoroughly acclimatised. The rice cultivation, with large tracts under water over most of China, favours the production of ague. In the North, where ague is rare except in seasons of inundations, and where the soil is sandy, and, consequently, very absorbent, ague is naturally uncommon, and leprosy is practically unknown. In the South rice is the principal food, and is usually eaten with a little fish or vegetables, both being either fresh or salted; and of course pork, fowls, and ducks are frequently partaken of. The rice is indigenous; and although not always of the finest quality, is, nevertheless, considered sweet and wholesome. The meat element increases, and the rice diminishes, as we ascend in the social scale. Sweet potatoes and yams in the South, and wheat, millet, and Indian corn in the North, alternate with the rice. All sorts of oils, such as ground nut oil, sesamum, castor, etc., are consumed. Potatoes are not eaten, except in times of scarcity, by the Chinese. The markets are always well stocked with all sorts of fresh vegetables. Fish is not uncommon on the sea-coast; and along the rivers and canals dried shrimps are in very common use as a condiment to their rice. Fish, however, is little partaken of by the very poorest among whom the disease is often seen. In the leprous districts the food of the leprous differs in no respect from that of other people. There does not seem to be any connection either between it and syphilis. Syphilis in the individual does not act as a pre-disposing or exciting cause. It is said at Shanghai that both

affections have spread in that district since traffic with the South by sea has become easy and constant. Of fifty cases seen at Amoy, thirteen attributed the disease to taint, four to infection, and in five cases there was a history of syphilis. Syphilis is, however, dismissed as a cause, ten per cent. of the population being syphilitic, and the leprous no exception. Leprosy appears, therefore, from a review of all the circumstances, to be "a degeneration that flourishes amid a variety of climates, soils, foods, and races, and cannot be attributed to any specific defect in one of these, and yet it never takes root in a vigorous population without the aid of an unfavourable conjunction of several of them. It does not resemble an animal virus in the power of self-augmentation in the system, or of perpetuating itself by transference to the healthy, nor do its symptoms disappear in the following generation, but they cling to particular families over long periods, or remain latent, or display themselves according to the intensity of predisposition or exciting causes. It is thus more like the scrofulous and phthisical than the syphilitic diathesis."

Treatment.—The Chinese regard the disease as incurable. The native doctors acknowledge their powerlessness to cope with it. To prevent disfigurement of the face, they sometimes consign the patient to the inside of a newly-slaughtered and eviscerated bullock, and serve up a cooked placenta. Lepers are recommended to live alone and attend carefully to their proper nourishment. The sovereign remedy employed is the leaves of the *Xanthium strumarium*, a composite plant, the fruit of which is variously compared to the ears of women and pigs. Its leaves, under the name of *Herba Lappa minoris*, were formerly officinal in Europe, both for internal administration in scrofula, herpes, etc., and external application to strumous tumours. The oil of the seeds of the chaulmoogra seem to possess curative properties in leprosy. In China, on this account, the plant is called, from the name for leprosy, *ta-feng-tse*. It is doubtless a species of chaulmoogra, and probably nearly allied to the Indian *c. odorata* (Roxb.). The seeds have a reputation in the East as a remedy in skin affections, and especially leprosy. The late Dr Hobson ex-

perimented with the seeds of the Indian species, and found them effect a cure in recent mild cases. The oil was given in drachm doses twice daily for several months, and the affected surfaces had it also occasionally rubbed in. The first signs of improvement appeared in the diminution of the prominence and redness of the eruption, and the appearance of minute white scales appearing round the outer edge of the patches, and the central parts assuming the character of healthy skin. He administered saline aperients occasionally during the course of the treatment. The Chinese frequently use the oil as an external application to destroy pediculi. Its use in the practice of some southern hospitals has given better results than any other medicine. All who have been under its treatment for any length of time have been benefitted by it, and in some cases very decided improvement. No cases are recorded recently as completely cured. Dr Hobson, however, recorded, more than 20 years ago, the complete cure of two cases. Dr Dougall has reported marvellous results occurring in India under the use of the Gurgun or tree oil in the healing of ulcers, removal of thickenings and tubercles, and again in weight and healthy look. The nutritive efficacy of frictions of warm oil is acknowledged in other diseases attended with wasting. Workmen much employed with oil have experienced benefit. Its efficacy most probably depends on the external and internal stimulating of the absorbents. Small doses of mercury, combined with iodide of potassium, the application of some irritant to the leprous spots—as, for example, oil of cashen, iodine liniment, cantharides, etc., change to a healthy locality, good food and clean linen, have been the general indications of treatment followed by foreign practitioners in China. Iron, arsenic, iodide of potassium, and cod-liver oil, with improved diet, have been found to arrest the progress of the disease. At Chefoo, carbolic acid in the preparation of 1 to 80 of sesamum oil has also been used for anointing the affected parts. In two cases of continually cropping up ulcers it is reported that the ulcers healed up under constitutional means only, and for two months were sound, and both

patients affirmed that they have recovered sensibility in the parts previously lost. At Canton, the cases were much improved by long-continued use of arsenic or Donovan's solution, and the cases chiefly benefited were of the anæsthetic variety. The discoloration and reddish patches gradually faded away under arsenic or arsenic varied with iodide of potassium. Arsenic at Hankow has been found good in the anæsthetic, and mercury in the tubercular form. In view of the disappearance of both ague and leprosy from our own country by our improved system of drainage, quinine and arsenic ought to prove highly serviceable in its cure. The anæsthesia and ulcers, according to one observer, get better and more quickly so, under arsenic than any other treatment. Under almost any of these modes of treatment cases improve, numbness disappears, the muscular condition improves, ulcers heal up, and skin eruptions vanish. Change of residence away from the infected district in many cases seems to arrest the disease. Strangers going to leprous districts may contract it *de novo*. One important feature of treatment followed out in Trinidad has been the removal of the affected from the neighbourhood of marshes. In by far the largest number of cases, however, the treatment has been unsatisfactory, the patients failing to attend or persist in the treatment.

Cases seen at the hospital at Pekin :—

A man from the province of Shantung, aged 30, but in appearance 45; his eyebrows were gone; he had lost all sensation in his hands, and he complained of impaired vision. In his neighbourhood there were seven or eight individuals similarly affected, and they all agreed that it was leprosy. It has long existed and been recognized in the locality, which is flat and occasionally inundated by the capricious Yellow river. He, like all the others so affected, was an agriculturist, and owned and tilled a few acres of land. His parents and relations never manifested any similar symptoms; they marry, intermingle, and have families, and the affection does not seem to be either hereditary or contagious. His relatives were not known to have had syphilis or elephantiasis. This patient had had the disease for eight years, and

although he had tried numerous doctors and remedies, there was no permanent good result. It broke out once or twice each year with great virulence, when all his symptoms were increased. The remedies applied seem to have kept it to some degree in check. He had been acupunctured frequently and in many places, and swallowed drugs wholesale. Musk was introduced into the punctures—the moxa being used to drive in the medicine and, as was supposed, to drive out the disease.

Another case from the same province was reported. The patient was 26 years of age, and had had the disease for five years. He was married, and had children. Neither his parents nor any other relatives had any disease of this sort. His eyebrows had fallen off, and there was anæsthesia of the hands, feet, and body generally. His face was swollen and bronzed. He ascribed it to exposure to the exhalations of a low-lying, damp locality. In his part of the province it was not uncommon—he thinks there may be one per mille.

A case of tubercular leprosy was seen in a man from the second lock on the Tunchow canal near Peking. He had had the affection three years. It began on the left eyebrow with a kind of dark psoriasis, and the left half was anæsthetic. About two years ago white ulcers broke out on the palmar surface of the hand over the first phalanges, which exuded a yellow fluid, dried and healed. During the last ten days new ones began to break out on the inner surface of the fingers; the feet and legs were swollen from the knee downwards; there were no ulcers on the foot; the nails of hands and feet were dry and dead-looking, and were filled up inside with dry skin. The face took on the strongly-marked tubercular form only during the last year; the right eyebrow was completely gone; the hair of the head was falling off all round; he had no eyelashes, and very little hair on the lower part of the chin and half of the left eyebrow. There were tubercles also on the neck, but the trunk was free. He was engaged carrying rice, and assisting boats at the lock and on the canal. In summer he bathed in the canal once or twice monthly. He had been married for 18 years, and has no family. He has one sister only, who is married, and has three children.

IV.—NOTES ON CARDIAC CASES, FROM CLINICAL OBSERVATIONS.

By A. WOOD SMITH, M.D.

THE following cardiac affections afforded material for clinical instruction during last winter session, and are now recorded with the view of showing how they were differentiated.

Diseases of the heart are but the expressions of disordered conditions of the general health, to which the individual has become so habituated, that the diathesis has merged into a serious organic lesion almost before the leading symptoms are complained of.

In Scotland, I believe that rheumatism, syphilis, and chronic alcoholism, are the chief factors in producing the cardiac lesions which we are called on not only to treat, but, I consider also, to prevent in a great measure. Even granting that organic changes have occurred before we are consulted, there can be no doubt that in many cases progressive cardiac disease might be obviated, if we eradicated the constitutional taint or vice which led to its occurrence. Frequently, while tracing the gradual enlargement and dilatation of the left ventricle from aortic regurgitation, or during a protracted case of anæmia, I have likewise noticed the return of the heart to a normal size in myo-carditis, or the disappearance of the signs of endo-carditis. I therefore hold, that the medical art can not only do much to remove the immediate results of cardiac disease, but also to hinder considerably the occurrence of those serious organic changes daily seen, if such cases were sufficiently early brought under the physician's care. The first case to be described was one of aortic regurgitation following rheumatism, producing great hypertrophy of the left ventricle—the *cor bovinum*—leading ultimately to dilatation, with its results on the pulmonary organs, and, from their condition, to passive congestion of the whole venous system. It occurred in Joseph C., whose pallid face, expressive of continued suffering, contrasted forcibly with the cyanotic and apathetic appearance of Donald C., who lay in the same ward, the subject of mitral regurgitation *without* aortic disease, but arising from

degeneration of the left ventricle, and apparently the result of protracted intemperance, conjoined with syphilis.

Aortic Regurgitation, and its Results.

This was exemplified in Joseph C., aged 40, who was first admitted on the 19th of October, 1876, owing to his having a frequent cough, with frothy expectoration, breathlessness on the least exertion, tenderness on pressure over the epigastric region (from hepatic congestion), and, to use his own words, "a swelling up of the stomach after food."

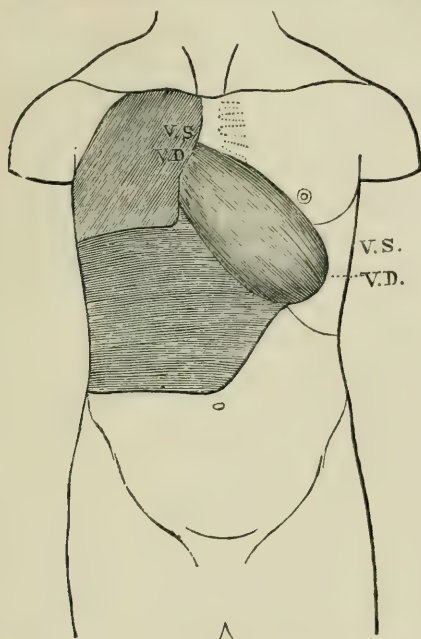
He had been in the army for twenty-one years, and had suffered from rheumatism for four years previous to his admission into the Royal Infirmary. There was no history of syphilis. Within two months the case got rapidly worse, as, when admitted, Mr Seton Orr, who was very accurate in his reports, stated that the area of cardiac dulness and apex beat were normal. Yet, on the 4th of December, the left ventricle was so enormously hypertrophied, that the whole heart might well be termed the *cor bovinum*. Occasionally severe attacks of angina pectoris came on, and at this time he always complained of what he styled "a bursting about the heart"—a feeling relieved by smart purgation, and probably caused by the imperfect emptying of the left ventricle.

The objective symptoms were as follows:—An anxious expression, generally indicative of distress, coupled with a pallid complexion, quite free from lividity. The patient, for the most part, generally sat up in bed, or lay on his right side across several pillows. Beyond a little puffiness on the right malar bone and over the back of the feet, there was at this period of the illness no dropsy.

Increased pulsation was noticed over the carotids and the left apex-beat, whilst the radial arteries, which pulsated strongly, were found to be tortuous and compressible. There was, however, no distension of the jugular veins.

On examining the heart, the impulse of the left ventricle was diffused and extended from the fifth to the seventh rib,

in a direction downwards and outwards from the left nipple. The physical signs are shown by the following diagram:—



Case of aortic regurgitation, producing great hypertrophy of the left ventricle, and passive congestion of the liver. V. S. (ventricular systolic), and V. D. (ventricular diastolic) murmurs.

Murmurs were heard in the situations indicated by the letters, as seen in the diagram. The dulness over the right lung was from pleuritic adhesion. Percussion gave a widely increased area of cardiac and hepatic dulness which was recorded on the 4th December, 1876. On auscultating over the apex beat, blowing murmurs were found replacing both of the heart's sounds which became fainter, and almost inaudible as the patient gradually sank. It may be remarked here that, on his admission two months previously, the mitral murmur was single, with a slight roughening before the first sound.

Towards the cardiac base the mitral murmurs above alluded to faded away; but on the right side of the sternum, between the second and the third rib, another double blow.

ing murmur was heard, the diastolic portion being the louder, and carried with greater intensity downwards than into the vessels of the neck.

In the carotids, however, a double murmur might be distinguished.

The radial pulses were equal in strength, apparently full and bounding, but compressible, and conveyed the water-hammer sensation, which was increased on elevating the arm.

When the stethoscope was applied over the radial artery, the arm being still raised, there was heard a distinct "thud," which was replaced by a bruit on depressing the limb.

Coincident with the overloaded state of the heart, frequent attacks of epistaxis came on.

As the heart dilated, the lungs became more and more congested; respiration was markedly costal, and the white, frothy expectoration, from being merely stained with blood, became latterly pure blood.

Percussion gave slight dulness over the right lung anteriorly (shown after death to be due to an old pleuritic adhesion), and, posteriorly, also over both bases. On auscultating, the presence of crepitus during inspiration, with prolonged expiration over the right lung anteriorly, reaching as high as the apex, showed that it was more congested than the left: the decubitus might cause this.

Posteriorly over both bases, a muco-crepitant râle was heard.

There was general congestion of the abdominal organs. The *vis a tergo* in the circulation being deficient, and the free entrance of blood into the lungs becoming gradually arrested, passive plethora was more and more established.

From pressure of the heart, and engorgement of the liver, the uneasiness after food previously complained of was increased.

The kidneys did their work imperfectly, owing to deficient arterial tension and venous congestion; consequently anasarca became developed, and dropsy of the left pleural cavity setting in, caused, by its compression, a cyanotic complexion instead of the previous pallor. The complete ad-

hension of the right lung prevented any outpouring into the sac; and the existence of this pleurisy is interesting, as showing the tendency of inflammation of serous membranes to occur in the rheumatic diathesis. A sudden angina seizure would have been welcome at last, as this poor soldier died by inches, and for days and nights the ward re-echoed with his groans, notwithstanding the careful administration of sedatives.

Purgative, diuretic, expectorant, and stimulant treatment with blisters to the epigastrium, relieved the sufferings to a certain extent; but the left ventricle gave way under the strain, and the heart being robbed of its own supply of blood, through the emptiness of the coronary arteries, became dilated on both sides.

The *post-mortem* examination, made by Dr Foulis, on the 29th December, 1876, corroborated the diagnosis:—

“The heart weighed $25\frac{3}{4}$ ounces; left side enormously dilated; mitral orifice admits three fingers easily; tricuspid orifice admits five fingers; segments of aortic valve thickened and shortened; mitral segments also thickened, but without recent vegetations; valves on the right side of heart hardly if at all thickened.”

Mitral Regurgitation without Aortic disease, but following Chronic Alcoholism, and possibly Syphilis.

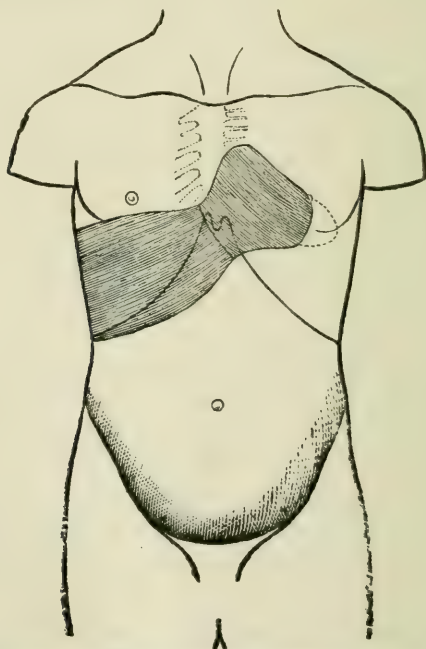
This case formed a striking contrast to the preceding one. It occurred in Duncan C., aged 60 years, who was trained as a baker, but had acted in the capacity of a fireman, and was thus exposed to extremes of temperature.

Within six months he was admitted for the third time, on the 30th November, 1876, owing to cough, with slight expectoration, breathlessness on exertion, general dropsy, and great uneasiness after food. Instead of wearing an anxious look, so characteristic of aortic regurgitation, he lay dreamily on his back, with a stupid expression, suffused conjunctivæ, and contracted pupils. His complexion was of a pale cyanotic hue, and he appeared to be labouring under a certain amount of carbonic acid poisoning, from non-æration

of the blood. The jugular veins were distended, but neither pulsated nor filled from below, when emptied in an upward direction.

The body was enormously swollen with dropsical effusion, and the existence of an equally-distributed pustular eruption, leaving deep cicatrices, raised the question of syphilis. He had no epistaxis, angina pectoris, or hæmoptysis. On examining the heart, little impulse from either ventricle could be detected owing to feebleness and intermission of action, with probably an emphysematous condition of the margin of the left lung, there being no pericardial effusion to account for the weakness of the sounds.

By the aid of touch, percussion, and auscultation, the left ventricle was found to be enlarged transversely, as shown by the following diagram—



Mitral regurgitation from dilatation of left ventricle, with œdema of lungs, deepening of pulmonary second sound, ascites, etc. The dotted line indicates the extent of the cardiac dullness two months after the first report.

On auscultating, the stethoscope revealed, in addition to great irregularity and feebleness of sound, an abrupt blowing murmur systolic in rhythm, only heard when a complete contraction of the left ventricle took place.

At the base of the heart the sounds were pure, with a very slight intensification of the second one over the pulmonary artery. The radial pulses were hardly perceptible, especially that of the right side, and thus contrasting strongly with those felt in the case of aortic regurgitation.

The physical examination of the lungs pointed to chronic bronchitis of the upper parts and œdema of the lower, as shown by a sub-tympanitic note on percussing over the infra-clavicular regions, with dulness equally marked on both sides posteriorly, wheezing râles being also heard in the upper tubes, and a coarse crepitus on inspiration below. The encroachment on the breathing space was likewise made evident by the hurried respiration, amounting to 32 per minute.

The condition of the abdomen would increase the dyspnoea as the liver was passively congested, and a considerable amount of fluid existed in the peritoneal cavity.

The urine was decreased in quantity, acid, of a deep yellow colour, had a specific gravity of 1028, deposited urates, but was free from albumen and sugar.

In this case, the intermission and dilatation of the left ventricle caused in the pulmonary circulation a stasis, which in its turn produced passive congestion of the portal and the renal veins, followed by general dropsy. Thrice he was rescued by free purgation, diuretic, stimulant, and tonic treatment, until in March, 1877, he was able to be removed to the Town's Hospital.

That dilatation of the left ventricle could arise from intemperate habits, as it probably did in the above case, was verified last year in the illness of a gentleman, who, addicted to the prolonged abuse of alcoholic liquors, had suffered for a few years from angina pectoris and latterly dilatation of the left ventricle, without, however, any marked incompetency of the valve. He died suddenly from rupture of the left

ventricle, following thinning of its walls, as proved by the *sectio cadaveris*.

Mitral Regurgitation from Hypertrophy and Dilatation of the Left Ventricle following Albuminuria, Arterial tension with general Fibrosis, Reduplication of the First Sound, Cirrhosis of the Liver, Hæmatemesis, and temporary general Dropsy.

This cardiac lesion shows how the left ventricle may suffer, as in the preceding affections, but from a totally different cause. It is going on in a gentleman, 63 years of age, who consulted me four months ago on account of breathlessness, which he attributed to asthma, as it came on paroxysmally towards 1 a.m. His general health and habits have been equally good, with the exception of an attack of cerebral congestion which occurred last summer. His physiognomy is one indicative of good health, but for some time before I knew him professionally, I had noticed his temporal arteries to be exceedingly tortuous and pulsating visibly.

Upon examination, I found considerable over-action of the heart (fully ninety-eight contractions per minute, a condition which has now existed for months), an increased area of cardiac dulness, measuring transversely five inches and four vertically, a blowing murmur following the first sound and heard to the left of the nipple, while, at the junction of the fifth with the sixth left costal cartilage, the first sound was doubled, and over the aortic valves the second one was deepened in tone. The accompanying diagram illustrates the physical signs elicited.

The radial arteries were in a high state of tension, having under the fingers a tendon-like feel; and the diagnosis was completed by discovering the urine to be slightly albuminous, very abundant, exceeding even 100 ounces per day, besides containing granular and hyaline tube-casts. On inquiry, he admitted that for the last three or four years he had to rise twice or thrice during the night to micturate.

The condition of the lungs was not such as to account for the breathlessness, as there was little wrong beyond

slight dulness over the base of the left one posteriorly, with crepitation on inspiration.

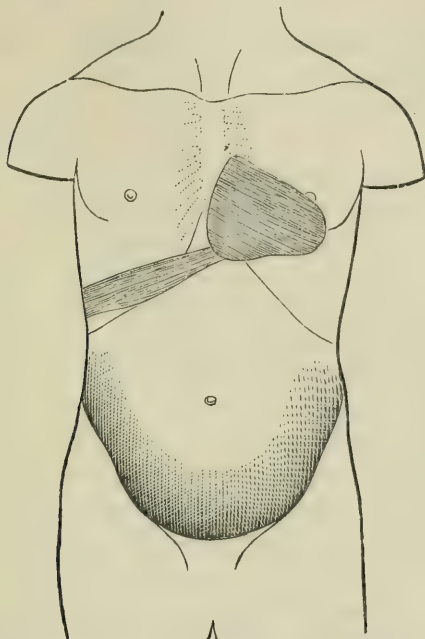


Diagram showing hypertrophy of left ventricle, following a general fibrosis of the internal organs. The hepatic dulness barely measures $1\frac{1}{2}$ inches in the mammary line.

This gentleman, quite unaware of his perilous condition, was daily attending to his business, and I felt it my duty to gently urge upon him a withdrawal from his occupation.

Within the last two months he has become rapidly worse. A little puffiness over the feet appeared, and sciatica confined him to his arm chair; but the latter wore off, only to be succeeded by dropsy of the lungs, abdomen, and extremities.

Probably an inference may be drawn regarding the state of the kidneys from that of the liver. The hepatic dulness barely measures $1\frac{1}{2}$ inches in the right mammary line, and towards the end of May melæna appeared, followed by profuse hæmatemesis, bringing relief to the breathlessness by lightening the pressure on the pulmonary and portal circulations.

The ascites and œdema of limbs have well-nigh disappeared, but the heart is still rapid in action, while the respirations amount to 32 per minute, both lungs posteriorly being equally hepatized, as shown by dulness on percussion and tubularity of the breath sound.

Whenever the urine becomes scanty, which occasionally occurs, the patient is restless, semi-comatosed and *the respirations frequently cease for fifteen or twenty seconds, without the action of the heart being in any way altered.*

At other times he has an incessant craving for animal food.

Since the above notes were written this gentleman died quietly on the 7th of August. He had prolonged attacks of unconsciousness, varied with lucid intervals, but without ever regaining his former mental acumen. From the combined effects of mitral incompetency, arterial tension, and passive congestion of the venous system, the colour of his hands became of a modena tint and his fingers were shrivelled.

His condition recalled the case of an old man in the Royal Infirmary, who died by slow degrees from a weakened heart producing gangrene of the tip of the nose and extremities of the fingers, the nails of which I caught him pulling out in succession. The preceding facts were not verified by a *post mortem* examination, but all the symptoms pointed to a general fibrosis. During his life no weakness of sight ever manifested itself.

Hypertrophy and Dilatation of the whole Heart, with adherent Pericardium, Cyanosis, Œdema of the Lungs, Congestion of the Liver and Kidneys, general Dropsy, along with Purpuric Blotches on the lower limbs, etc.

This category of symptoms was presented by Mrs Susan F., aged 28, whose general health and family history were against the supposition of pulmonary disease as a primary affection. Eight years ago she had scarlet fever, which confined her to bed for six weeks. There was no dropsy then; but I suspect rheumatic endocarditis may have begun, as she has had palpitation ever since.

Three months before admission she lay for eight weeks with rheumatic fever, and gives a clear account of having, after this attack, had pain and uneasiness over the cardiac region, extending to the sternum, followed by dyspnœa, palpitation, a sense of choking when in the recumbent posture, and sleeplessness, cough, with scanty expectoration, tenderness and swelling of the abdomen.

When I first saw her she was in great distress; her anxious expression, with a dusky flush, is not easily forgotten, and her eyes were slightly jaundiced, and pupils rather dilated. Decubitus was dorsal; respirations amounted to 36 per minute, were accompanied by movements of the *alæ nasi*, and chiefly performed by the thoracic muscles.

The skin was dry and dusky throughout; temperature amounted to 99·8; and dropsy of the trunk and limbs, with purpuric spots on the latter, was noticed.

As the cardiac symptoms were the primary ones, I shall describe them first. The systole of all the chambers of the heart caused a drawing in of the intercostal spaces from beneath the second rib to, at least, the sixth, and the area of cardiac dulness measured fully six inches transversely. The apex beat of the left ventricle was thus diffused, the action of the heart hampered, and very irregular.

It did not present so much of the "jogging and tumbling" action as we had in one case with adherent pericardium, but without much dilatation of the left ventricle.

On auscultating, a faint blowing murmur following the first sound was heard over the apex, and the heart was contracting so weakly and quickly that the radial pulses could not be counted. No remark is made in the journal about the aortic valves.

The pulsation of the right ventricle extended under and beyond the sternum; no murmur, however, was heard, but only a deepening of the pulmonary second sound.

There were pulsation and distension alternated with emptying of the jugular veins during the diastole of the heart, which circumstance so far confirmed the diagnosis of adherent pericardium.

Respiration was chiefly effected by the upper portions of the lungs; and on percussing anteriorly increased resonance, approaching tympanicity, was educed under both clavicles, but this disappeared below the mammary regions.

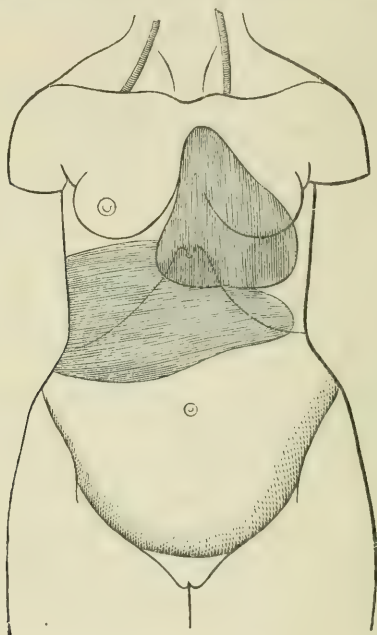


Diagram showing dilatation of the whole heart, with adherent pericardium, substernal pulsation, and diffused left apex beat. The mammæ were extremely atrophied, which is not shown in the figure.

This limited tympanitic percussion is, to me, generally suggestive of consolidation or collapse elsewhere in the same lung. With prolonged expiration in the upper portions of both lungs, there was a bronchial respiratory murmur, which became fainter and more distant in the lower, especially posteriorly; and, from the fourth dorsal vertebra downwards, dulness on percussion. A subcrepitant râle; diminished vibration, and vocal resonance were added to the physical signs on both sides.

She expectorated frothy mucus, but never spat blood.

The digestive tract was passively congested; appetite

for food impaired; and the little that she took was vomited: she had great thirst and constipation.

The liver was considerably enlarged and painful; the abdominal walls tense and tender on pressure; and there was a considerable amount of ascites.

Analysis of the urine, which was distinctly albuminous, gave a specific gravity of 1020, an acid reaction, and an average daily amount of 50 ounces.

As already mentioned, the most dependent parts of the body were dropsical; and from the continued strain on the portal vessels, purpuric blotches appeared about the ankles.

The treatment followed was purgative, diuretic, stimulative, and over the epigastric region the application of a blister, which gave considerable relief. The serum of the blister was deeply tinged with bile, and the cutis vera underneath had a hæmorrhagic tint.

Mrs Susan F. was so far relieved as to insist on being removed to her own home ten days after admission.

Her case afforded a wide range for physical diagnosis as regards the chest and abdomen, whilst it showed how intimately the different organs are linked together in their harmonious working.

If an adherent pericardium involves the free entrance of blood to the right auricle, it must necessarily produce much venous congestion; and in one case I happened to see in the *post-mortem* room there was little else to account for the presence of a large amount of ascites.

I can recal at least three other cases of adherent pericardium, which occurred during last autumn and winter. In one the heart was hypertrophied, and closely invested by the pericardium, without incompetency of the mitral valve.

It occurred in a young man who died within twenty-four hours after his admission, from the heart staggering and suddenly stopping under its load of blood. His complexion was rosy, and the heart presented the "jogging and tumbling" action described by authors, without much drawing in of the cardiac region.

A description of the three would be a repetition of many of the details of Mrs F.'s case.

They did not, however, manifest so much recession of the intercostal spaces, being, moreover, combined with endocarditis and profuse hæmorrhage into the lung.

Aneurism (general dilatation) of the Arch of the Aorta, causing Imperfection of the Aortic Valves, Hypertrophy of the Left Ventricle, followed by Incompetency of the Mitral Valve.

This condition of the vascular system is equally a contrast to obscure cases of aneurism, and those characterised by prominent tumours. It is devoid of the pressure signs of the disease, and reacts on the heart in the same way as aortic regurgitation, which follows rheumatism.

It is present in David J—, a labourer, aged 45 years, and admitted on the 16th May, 1877, on account of a frequent cough with spitting of blood.

He is a powerful-looking man, who has a good personal and family history, one questionable feature in his case, however, being that all his children were still-born.

He has had palpitation for two or three years, but was able for laborious employment until five weeks before admission, when general bronchitis, followed by a rusty spit, compelled him to seek advice.

His complexion is bronzed, the pupils are normal, and no anxiety is depicted on the face.

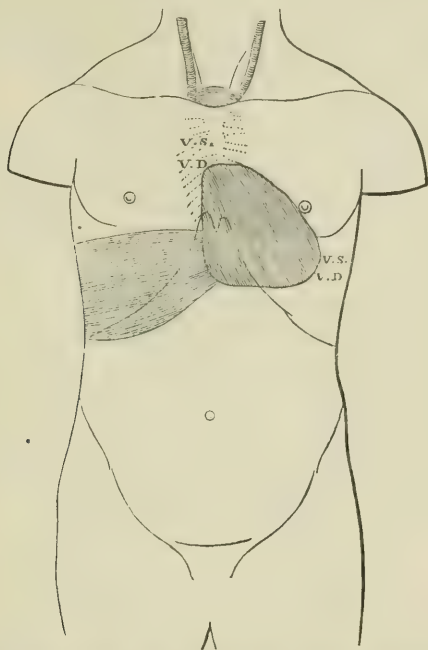
There is very marked pulsation over both carotids, and above the episternal notch, on grasping the neck, a thrill over all the vessels is made out.

The radial arteries are equally full, but compressible; and on raising the arms the water hammer pulse is markedly felt. This shock is well heard through the stethoscope, and is replaced by a blowing murmur when the arm is depressed.

The following diagram will show the position of the heart.

It is evidently depressed, extending downwards to the seventh rib, whilst it is also one inch to the left of the nipple

line. The apex beat is diffused; and, on auscultating, a ventricular systolic and diastolic murmur of a blowing character is heard.



Case of General Dilatation of the Aorta and Carotid Arteries, accompanied with Hypertrophy of the Left Ventricle and Mitral incompetency.

There is substernal pulsation, possibly from the uncovering of the right ventricle, owing to the depression of the heart; and a double blowing murmur is also heard, but without the other indications of tricuspid disease. This murmur, of which the diastolic portion is the louder, I believe to be aortic, as there are no evidences of tricuspid incompetency, and it retains its characteristics although the bronchial congestion is now lessened. It is heard along the sternum replacing the usual cardiac sounds, and is continued into the vessels of the neck.

The thorax is well formed, and measures 38 inches round the nipples.

Percussion is clear anteriorly, especially resonant over the

right infra-clavicular region, where the respiration is tubular and accompanied by moist râles.

These mucous râles are heard generally, but most markedly behind, over the base of the left lung, where small crepitation and dulness on percussion indicate congestion from regurgitation through the mitral valve. Respirations were 22 per minute.

Urine is normal in quality, but rather deficient.

By rest in bed, expectorant, diuretic, and tonic treatment the hæmoptysis has disappeared, and the bronchitis has cleared off, leaving merely slight crepitus with prolonged expiration at the base of the left lung posteriorly.

If this man could earn a livelihood without much bodily exertion, it would be possible, through the rest thus obtained, to reduce the aortic regurgitation to a minimum, prevent progressive dilatation of the left ventricle from heaping up of the blood and loss of arterial supply through emptiness of the coronary arteries, and consequently have his life prolonged for a considerable time.

Thoracic Tumour (Aneurismal?)

This case occurred in J. D., aged 45, who had been a soldier for ten years, and, in the early part of his career, had contracted syphilis. His habits have been intemperate; and latterly, to earn a livelihood, he was employed in carrying large advertising boards on the streets, supporting his burden chiefly on the right shoulder. A minute detail of his family and personal antecedents could not be obtained, owing to a memory weakened from the occurrence of epileptic fits; but the physical signs, aided by the history of syphilis and alcoholism, favour the presumption of aneurism.

His expression is anxious and troubled; he looks aged, and from the first we noticed contraction of the right pupil, with a congested state of the ear and cheek on the same side. He prefers an upright position in bed, owing to laryngeal obstruction, which, along with disordered innervation, has reduced his voice to a whisper, and rendered imperfect his

frequent cough, made all the more harassing by the difficulty of getting rid of a scanty muco-purulent expectoration.

He complains little of a tumour which is pushing forward the right sterno-clavicular articulation, pressing on the blood vessels, sympathetic nerves and right recurrent laryngeal nerve, at the same time displacing the windpipe towards the left. He has had pains shooting down his arms; and now complains of a feeling of numbness, with coldness, in the right arm, extending to the tips of the fingers, as also of neuralgic pains in his brow.

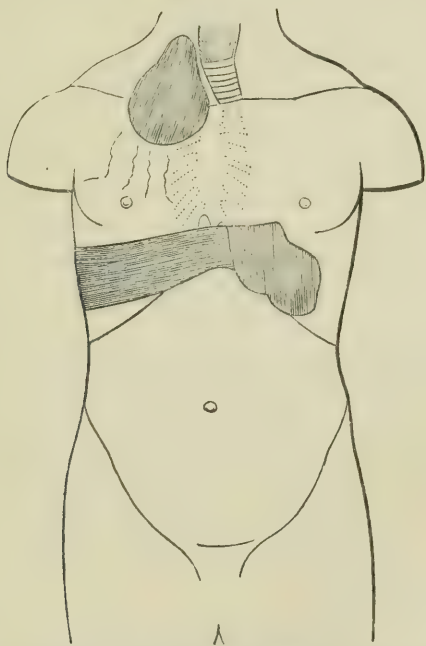


Diagram showing position of a Thoracic Tumour (Aneurismal?) which obstructed equally the circulation and respiration, as shown by depression and dilatation of the heart, &c., and displacement of the larynx. The abdomen was deeply retracted during the laborious and accelerated breathing.

The tumour, extending transversely for four inches under the right sterno-clavicular articulation and first rib, and pointing upwards in the neck as high as the first ring of the trachea, has a rounded contour, is dense and fixed, without

expansile pulsation or bruit, except in the upper part, which is above the clavicle, where it is softer, and pulsates a little.

The heart's sounds are heard in the tumour; but the circulation in the right carotid, temporal, and brachial arteries, which are thickened, is almost, if not entirely, obstructed; the venous circulation in the right side of the chest and corresponding arm being likewise much impeded.

The left radial pulse is weak, and averaged about 112 per minute.

The heart, depressed probably from interference with the circulation, is drawn down by the forcible contractions of the diaphragm—the chief agent in carrying on the respiration, which is markedly abdominal—whilst the abdomen itself is deeply retracted, presenting a sunken and concave appearance.

The apex beat is behind the sixth rib, to the left of the nipple line; and a systolic murmur is heard at that point. Nothing abnormal is noted about the sounds over the base.

Respirations amount to 32 per minute, and inspiration is very laboured.

The laryngoscope shows that there is paralysis of the right vocal cord; and over the bronchial tract there are wheezing râles, with broncho-vesicular breathing and prolonged respiration, which is louder on the right side than on the left. There is dulness around the thoracic tumour, and over the root of the neck.

The digestive system is in good order, but there is difficulty in swallowing.

The urine is concentrated, and free from albumen.

The right pupil—the contracted one—was easily dilated by atropine, and remained so for a considerable time. Ophthalmoscopic examination, performed by Dr Meighan, showed little difference between the eyes.

The facial congestion in the right side was very constant, and the skin remained dry.

With rest in bed, light diet, gr. xx. doses of the iodide of potassium thrice daily, belladonna locally for the brow-ache, &c., this man improved considerably, as shown by the relief

to the breathing, which had been so spasmodically affected as to raise the question of tracheotomy, or division of the sterno-clavicular articulation.

He is now, I believe, living out of town.

Although the diagnosis has not been confirmed *post-mortem*, I classify this tumour as aneurismal from the absence of cancer elsewhere, and the direct disturbance to the circulatory organs.

I had, two years ago, in the same ward a case which in many respects was very similar to the last.

The tumour did not extend into the neck, but caused a slight prominence of the right infra-clavicular region; and dulness on percussion was noticed for two inches transversely, and one inch perpendicularly, at the sterno-clavicular articulation on the same side.

A systolic murmur was faintly heard over this dulness when respiration was arrested.

The tumour was entirely thoracic, and caused laryngeal and bronchial irritation to be the prominent symptoms.

The heart was unaffected at this time, but even then the occlusion of the brachial arteries, with seizures of angina pectoris, pointed to the existence of aneurism.

The patient, who had been a gunner in the Bengal Artillery, supposed that he was labouring under bronchitis, and gave a graphic account of attacks of angina pectoris he had experienced.

He has since died, and the diagnosis was confirmed by a *post-mortem* examination.

Aneurism of the ascending portion of the Arch of the Aorta, producing Hypertrophy and Dilatation of the Left Ventricle, and following an atheromatous condition of the Arterial system.

This case occurred in a widow, aged 55, who came under my notice on the 13th of March, 1877. It illustrates how easily the diagnosis may sometimes be made of this disease, whereas, in others it can only be suspected.

The patient had evidently passed through a good deal of privation, together with hard work, and laboured for some

time under chronic arteritis, without being conscious of the tumour until a few weeks before admission.

On examination, there was readily seen, pointing to the right of the sternum, between, and displacing forwards, the third and fourth ribs, a tumour with expansile pulsation, and over it a double bruit could be heard. These physical signs existed independently of the heart, which was hypertrophied and displaced downwards.

There was no history of rheumatism or alcoholism, but she had had three stillborn children, and lost a brother, as also a sister, suddenly, from heart disease.

She suffered from palpitation for many years, and stated that her general health began to fail four years prior to her coming under my care, as shown by impairment of appetite, with consequent loss of flesh and strength.

At this time she began to experience a sharp burning pain over the cardiac region, brought on in great severity by any exertion, such as walking quickly or going up a hill or a stair, and this caused her to sit down anywhere to prevent fainting. She was also breathless on exertion.

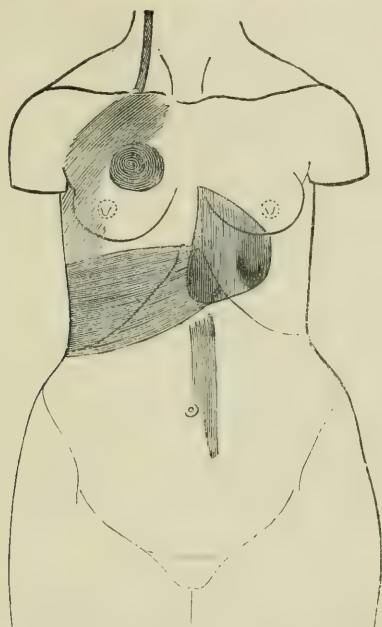
To earn a livelihood she had been obliged to spin, and carry heavy loads on her right shoulder.

She complained for the most part of a burning boring pain where the aneurism was pressing against the ribs, which sensation extended down the arms, chiefly on the right side.

Her general configuration is small, complexion sallow, the arcus senilis is well marked in both eyes, and her features are indicative of suffering. In this general survey, the tortuosity of the temporal arteries, without tension however, and the extreme fulness of the right jugular vein (neither pulsating nor filling from below on emptying the vessel upwards) are noted.

On inspecting the chest anteriorly, attention is at once arrested by the presence of a tumour, pointing forwards between the third and fourth ribs, an inch to the right of the sternum, and measuring $3\frac{1}{2}$ inches perpendicularly by 4 transversely. Delicacy in manipulation must be used in

examining the tumour, owing to the thinness of its walls and pain on pressure. Expansile pulsation over its surface is both seen and felt, and on auscultating, a double bruit is distinguishable. The following diagram illustrates the position of this tumour and the area of cardiac dulness—



Case of Aneurismal Tumour in Mrs R., arising laterally from the ascending part of the Arch of the Aorta, and causing depression with dilatation of the Heart.

On examining the heart, the apex-beat is found to be diffuse, exaggerated, and pulsates, in a line with the left nipple, against the fifth and six ribs. The cardiac dulness can be mapped out very distinctly from the aneurisma tumour, and shows the organ to be displaced somewhat downwards and dilated on the left side. Over the apex of the left ventricle double (systolic and diastolic) blowing murmurs are heard, which disappear towards the base, to be replaced by those already described as belonging to the aneurismal sac, and which are continued into the subclavian arteries, especially the left.

On bending the arms, the brachial arteries are observed to be snake-like from their tortuosity, but free of hardness. The left radial pulse is weaker than the right, and although the heart is extremely excitable its average beat is 88 per minute.

Observations were made in order to compare the temperature of the two sides of the body, but they were not satisfactory enough to be recorded.

The physical examination of the lungs shows the presence of broncho-pneumonia on both sides, and that the right one is hampered in its action. Thus anteriorly and posteriorly the percussion note is comparatively dull over the right lung, and the respiration is diminished in amount, being tubular in the upper part, and accompanied with crepitus on inspiration in the lower half. Over the left lung the signs elicited are similar to those of the right, with the exception of tympanitic percussion replacing the dulness noticed over the upper part of the right.

The patient has a slight cough, and a little expectoration of frothy mucus. She is subject to aggravation of this bronchial irritation, and once had apparently an angina-like seizure.

On examining the abdomen, the liver is slightly and uniformly enlarged, with depression of its left lobe. On her admission the abdominal aorta pulsated very markedly, but with rest this has disappeared. Her appetite for food is indifferent, and she states that she was formerly subject to vomiting. Bowels are regular; urine normal in quantity, acid, having a specific gravity of 1025, with a slight trace of albumen, and a deposit of urates and a few oxalates.

The treatment enjoined in this case was perfect rest; a diet restricted in quantity as regards fluids; — gr. xx. of iodide of potassium thrice daily, increased to a drachm, which doses were continued for weeks without inconvenience. Ice-bags were applied to the tumour, alternated by cloths saturated with belladonna liniment, and sleep was induced by hypodermic injections of morphia.

Consolidation of the aneurismal sac was further promoted

by galvano-puncture. This procedure was accomplished by introducing well into the sac an insulated needle, attached to the positive pole of a Stohrer's battery, and placing a sponge, connected with the negative current, over the sternum. The action of the constant current was first tested by its effect on the white of egg, and the strength employed regulated by the rapidity and amount of coagulation which followed, and the feelings of the patient. The current was kept up for nearly an hour, and repeated thrice at intervals of ten days. It certainly induced greater firmness in the sac, and after the third application the second part of the aneurismal bruit disappeared, and I could then detect a return of the aortic second sound, deepened in tone.

The patient, wearying of her confinement, did not carry out the perfect repose so necessary in her ailment; and after five months' sojourn in the hospital, she requested to go home. Although a double pulsation had returned in the tumour, the pain caused by its pressure and the progress towards the skin were considerably arrested.

Concluding Remarks.—The elucidation of the different facts brought out in the preceding cardiac cases made the students familiar with the whole realm of physical diagnosis. The writer has abstained from adding to the cases, which are already too lengthy, and will merely mention that embolism was, unhappily, illustrated at least in two illnesses, which are not here recorded. In the first instance it occurred in a little girl, aged 11 years, the subject of aortic and mitral disease, with the result of producing right hemiplegia and aphasia. The whole of the epidermis over the plantar surface of the affected foot *became markedly hypertrophied*. This nervous seizure drew our attention to aphasia and the paralyses. The little girl was removed home shortly before she died, which event occurred a month after the embolism.

The other example was in a man aged 55, who lost his foot from this cause.

Among the aids to diagnosis, the laryngoscope was of

decided advantage in distinguishing between primary affections of the larynx and those arising from disordered innervation.

V.—TWO CASES OF INFANTILE POISONING BY OPIUM.

By JOHN DOUGALL, M.D., F.F.P.S., *Lecturer on Materia Medica in the Glasgow Royal Infirmary School of Medicine.*

THE first case was that of a strong male, aged ten months, whom I was asked to visit about 2 a.m. On the way, I was told he had been screaming and restless for some hours, and now seemed sinking. I found his state not what I was led to expect—there was deep sleep, so that he could not be roused; breathing slow and rippling, pulse sluggish and full, and what at once suggested the cause of these symptoms was the extremely contracted pupils. On enquiring whether he had got any medicine, a relative of the child's, a medical student, said that in order to allay the severe pain which the child seemed suffering, he had given him a little opium about four hours before. "How much?" I asked. "Oh," he said, "he had just cut off a small bit from a piece of opium with his pocket-knife, and dissolved it in brandy, and given it." I asked what quantity there might be? He was not sure, but latterly thought "about a grain." He was much surprised when told this was a dangerous dose for a child, which, of course, he now saw. Two grains sulphate of copper and an ounce of water were mixed, a teaspoonful of which caused vomiting, and amongst the vomit were a few specks of opium. As it was obvious, however, from the state of the child, that the drug was largely absorbed, the usual means resorted to in such cases were tried—artificial respiration was begun, ammonia and strong coffee were given, the child was constantly shaken and slapped on the face and breast with a cloth wet with cold water, the nostrils were tickled with a feather, the

limbs swathed in mustard fomentations, &c. From two in the morning till ten at night was this treatment pursued, with short intervals, during which the child was deeply narcotized, and it seemed impossible to predict truly the result. However, in about twenty-four hours after the opium had been given, the abnormal symptoms began to subside—the pupils dilating and responding to light, the breathing getting more natural, and what fairly calmed our fears was seeing the child taking the breast. Recovery was soon complete.

CASE II. A week after seeing the first case I was hurriedly asked by a gentleman, a stranger, to see his child, a female, said to be very ill. On the way, he told me the child was two weeks old, that his own medical man had seen it that day, and was treating it and its mother for some bowel affection. I found the child asleep on the nurse's knee, and was told it had slept about four hours and could not be roused. I found that no amount of shaking or pinching could waken it. There was no radial pulse, the respiration was scarcely perceptible, and the pupils were obliterated. On enquiring whether it had got any medicine, the following prescription was shown me, of which it had got one powder about four hours before :—

R. Hyd. c. cret. grs. viii.

Pulv. opii. gr. ss.

Divide into four powders.

Sig.—One every eight hours.

It was now clear that the child was suffering from an overdose of opium, viz., one-eighth of a grain. Hence the medical attendant was at once sent for. Meantime, instructions were given to use the same means as in the first case; and, having other urgent business on hand, and knowing the family physician would soon be, I left. I heard nothing further of the case till meeting the child's father two days after, he told me it had died in about five hours after I left. He and the medical attendant, a respectable practitioner, thirty years in practice, had called for me to see the child, but did not find me. It seemed the powders were intended

for the mother and not for the child. The patient's name was not on the prescription.

On comparing the doses of opium these two children received in relation to their ages (and it will be seen that in each case pure opium was given), it appears that the infant two weeks old receiving one-eighth of a grain got proportionately to the child ten months old two and a-half grains, while the child of ten months receiving one grain got proportionately to the child of two weeks about one-sixteenth of a grain. The results, therefore, in both cases are in remarkable harmony with the difference of age and dose, viz., as one-sixteenth of a grain of opium given to a child two weeks old is a dangerous though not necessarily fatal dose, one-eighth of a grain is a lethal quantity. In the same ratio two and a-half grains would have proved fatal to the child ten months old as one-eighth of a grain did to the child two weeks old.

It is well known that most young children are very susceptible to the toxic action of opium, and that extremely minute doses have destroyed life. Christison* mentions the following cases:—An infant three days old got about *the fourth of a dose containing ten drops of laudanum* and died twenty-four hours after. A stout child of fourteen months got *three drops of laudanum* in chalk mixture for diarrhoea, and died six hours after. An infant a few weeks old got *four drops of laudanum* and died soon after. A healthy infant four weeks old got a draught containing *one-eighth of a grain of opium and as much hyoscyamus*, and died twelve hours after.

Taylor† gives the following cases:—A child four months old was nearly killed with one grain of Dover's powder, equal to a *tenth part of a grain of opium*. A child four years and a half old got four grains Dover's powder, equal to *four-tenths of a grain of opium*, and died seven hours after. A child nine months old got *four drops of laudanum*, and died nine hours after. A child five days old got *two drops of laudanum*, and died eighteen hours after. A child two days old got

* Treatise on Poisons.

† On Poisons.

one minim of laudanum, and died eighteen hours after. A child under four weeks got a dose of paregoric containing about *one-ninetieth of a grain of opium*, and died seven hours after.

VI.—A YEAR'S EXPERIENCE OF EXCISION OF THE HIP-JOINT IN THE WARDS OF THE GLASGOW ROYAL INFIRMARY.

By JAMES MORTON, M.D., *Surgeon to the Glasgow Royal Infirmary, and Professor of Materia Medica in Anderson's College.*

(Read to the Glasgow Southern Medical Society in April last).

IN cases of strumous disease the operation of excision as applied to joints, and parts of bones, has long been a favourite, and when it results in the preservation of limbs, either partial or complete, cannot be too highly praised. The records of surgery show that this is a result by no means unfrequent, and entitles the members of our profession to take a high rank among public benefactors.

But there is another reason for performing some excisions, that of alleviation or relief of suffering and discomfort, and instances of that will be found among the following cases. These do not figure among the brilliant results of operations, and are rather eschewed by those (if there be such,) who operate only for éclât, and consigned to the category of incurables, tending as they do to sully those statistical tables which seem to the uninitiated to prove so much.

In reference to the cases now to be given, it is proper to explain that they are arranged chronologically, in the succession in which they presented themselves, and embrace the whole of the cases subjected to this operation during twelve months, in the wards under my own care.

Our surgical year extends from the first day of November of one year, to the same date in the succeeding year, and our report, therefore, refers to the year 1875-76. This year was selected because it was the most recent, not, as will speedily appear, on account of any great degree of success

attending upon our proceedings. On the contrary, it may safely be affirmed that, in previous years, success of a much more marked kind had been experienced, both as regards life and limb.

NOTES OF CASES OF EXCISION OF THE HIP-JOINT.

William Stewart, aged ten years, was admitted into Ward 19 of the Glasgow Royal Infirmary on the 13th November, 1875, suffering from hip-joint disease of about two years' duration. There is considerable thickening of the structures around the joint, with atrophy of the limb below. Though the thigh is adducted, when he attempts to walk, which he does only with assistance, he brings the foot in gentle contact with the ground, with the toes everted. The limb lies flexed, slightly adducted, and apparently shortened. Comparatively little pain is elicited at the joint on concussing the limb. At the upper and inner part of the thigh, a little below Poupart's ligament, there are two sinuses which cannot be traced by probe to any depth, and are said to be the result of an abscess which formed, and was opened about a year ago.

On the 24th of the same month excision was performed. The head of the femur was found in a soft and pulpy state, and the acetabulum in fair condition. The limb was laid on pillows in an easy position.

On the 29th, extension by means of a weight and pulley was applied to the limb, and patient was placed on a water bed.

On the 24th of December the wound is said to be nearly healed, and on the 24th of January, 1876, it is reported that a small quantity of discharge still continues to escape from a sinus at the upper end of the line of incision.

On the 17th March he was dismissed well.

This case promised very well as to the power of walking, but we have not yet obtained any account of his condition at this date (April, 1877). I doubt not that this will yet be obtained.

James Wilkie, aged 12 years, was admitted into Ward 19 of the Glasgow Royal Infirmary, on the 5th February, 1876,

with advanced hip-joint disease of six years' duration. Patient is pale and very much emaciated. The hip is much swollen, and presents an extensive ulcerating surface, with several sinuses, the result of successive abscesses. The limb is much wasted, shortened, adducted and flexed upon the body, in which position it is all but fixed. On endeavouring to straighten the limb, the curvature of the limb is increased till the back becomes strongly arched. The patient complains of great pain when the limb is concussed or moved in any way. Appetite feeble, and pulse 120.

Good food and wine did not effect much improvement in the condition of the little sufferer, and on the 23rd February the pulse was 144, and the temperature 100.2° . Longer delay being considered inadvisable, the operation of excision was performed, and the head of the femur found to be extensively diseased and the acetabulum considerably eroded, but not penetrated. So large was the raw ulcerating surface that the incision did not extend through any skin.

Limb placed on extension with a very light weight.

This patient remained in the Infirmary till the 5th August, when this report was entered in the Journal:—"This patient, who is sent home to-day, is still feeble and emaciated, and unable either to walk or to stand. The raw ulcerating surface mentioned above, though somewhat less in extent than when he was admitted, is still large, and has resisted all means of treatment. Tubercular (caseous?) matter, which after a time breaks down and comes away in the discharge, is seen deposited among the granulations."

Remarks.—From the first this case was considered as hopeless as could well be, and only a few years ago would have been excluded or dismissed as incurable, which it really was; and were it not that now we occasionally perform excision of the hip as a palliative measure, it would not have been interfered with. One other of the cases belongs to the same class, and upon these some general remarks will be afterwards made.

John Cowan, aged 8 years, was admitted on the 11th February, 1876, suffering from morbus coxæ, the symptoms

of which were first noticed ten weeks previously. There is marked flattening of the hip, with obliteration of the fold of the nates. There are no sinuses present and the integument is sound and natural in appearance. Behind the great trochanter deep-seated fluctuation can be detected. The limb is shortened to the extent of an inch, inverted, adducted, and partially flexed. Patient can rest the sole of the foot upon the ground but cannot bear his weight upon it. He is fairly nourished, tongue clean, appetite fair, skin moist and warm, pulse 120, and bowels regular.

On the 23rd February excision was performed. Pus found around joint, head of femur partially denuded of cartilage, and the bone soft and eroded; acetabulum in good condition.

On the 23rd July he was dismissed with the wound healed, except at one place where a small sinus was left, from which there was scarcely any discharge. Patient could walk tolerably well with the aid of a crutch and small staff, and with the latter he could step up and down stairs with comparative ease.

This little patient, who was recommended to go to the Convalescent Home or the country, was instead taken home by his friends to one of the most dingy and smoky parts of the city, and has since succumbed to an attack of Bright's disease.

Remarks.—So far as the operation is concerned this was a complete success, and the subsequent exposure of the patient to bad hygienic conditions is the more to be regretted. Visceral disease is a not unfrequent sequela of prolonged diseases of bones and joints, of which this case affords an instance; and to this also the necessary confinement to bed becomes a predisposing cause.

Hugh Campbell, aged 27, was admitted into Ward 19 of the Glasgow Royal Infirmary on the 16th May, 1876. Patient, who is pale and anaemic, but not greatly emaciated, complains of acute pain around the right hip, and also of pain above the inner side of the knee. There is flattening of the hip with wasting of the limb, which is flexed, adducted, inverted and apparently lengthened, but as shown by measurement

is shortened to the extent of at least an inch. On concussing the limb severe pain is produced at the hip-joint. A sinus exists at the upper part of the thigh, having an opening about the size of a sixpenny piece, situated over the inferior angle of Scarpa's triangle. An abscess which had formed in this situation was opened four months ago, and has ever since continued to discharge a considerable quantity of pus. He states that the disease began about a year ago, with a feeling of stiffness and pain in the hip-joint, and that it has ever since been gradually getting worse, until now he is unable to walk or even to stand, and can lie in bed in one position only, namely, on his left side, with his body twisted round and face downwards. He has been obliged to keep this prone position for the past nine months.

On the 20th May excision was performed. The femur was sawn through transversely just above the trochanter minor. The cartilage covering its head was found soft and eroded, thus exposing the cancellous tissue of the bone. He was, immediately after the operation, at once placed on his back to his unspeakable comfort, and two days thereafter a weight was applied to the limb over a pulley. Though at the time of the operation, pronounced to be an unfavourable case for ultimate recovery, he at first did very well indeed, and we hoped for him, but evidences of deeper seated disease affecting the bones of the pelvis began to appear, with formation of abscess in the lumbar region; and though supported by liberal allowances of wine, and other stimulants, with quinine, &c., he sank and died on the 19th October, fully five months after admission.

The wound made by the operation healed up entirely, except at two small points. His death was due to exhaustion.

Remarks.—This case, as already hinted, was at first considered an unfavourable one, and chiefly on account of his age, and the length of time during which he had been suffering from the disease and discharge. The operation, however, contributed very greatly to his comfort, and it may be urged that it afforded him the only chance he had of a recovery.

That the opposite was the result may in a great measure be ascribed to the delay in his coming into hospital, for he so nearly escaped that we are surely justified in supposing that had he been relieved of his diseased bone, and restored to comfort, say six months before, his chances of recovery must have been vastly improved.

This case, therefore, more decidedly than any of the others, points to the propriety of operating at an earlier period.

William Thomson, aged 2 years, was admitted on the 11th July, 1876 (Ward 28), with large abscesses on left thigh, with numerous sinuses, from which there is considerable discharge, and some destruction of the integument. There is flattening of hip, shortening of limb, with adduction and flexion. This patient was so exhausted that attempts were made to raise his strength, but not with much success; and the operation was not performed till the 26th September last, when the acetabulum was found to be sound, but the head of the femur was dislocated and absorbed, and the remains of it very soft. Patient did not suffer much from the operation, which of itself is not free from danger at such an age, but gradually sank and died on the 20th November last.

The only remark I would make at present on this case is, that close confinement to bed, and in one position, tells more severely on young children than on any other class of patients. Though the operation afforded much relief, the reluctance I felt to encounter the dangers of it is still strong on my memory.

The next case was that of Maggie Paterson, aged 5 years, admitted on the 29th August, 1876, and of whom the report is very meagre. There was flattening of hip, femur flexed on trunk, with inability to straighten the limb, and great pain when touched; foot slightly inverted. No sinuses, but fluctuation indicated the presence of deep-seated suppuration. Excision was performed on the 23rd September. The cartilage on the head of the femur was found eroded, the bone bare and partly excavated. Patient's limb was placed in good position, with a light weight attached. She progressed favourably, and was dismissed in good health, and

the wound nearly healed. She lives at Croy, and the other day I learned that she continues to improve. Her walking power, however, was not stated. It will be observed that this patient was not so young as the last, and was operated on during the stage of suppuration, probably a stage as favourable as any for ultimate success.

General Remarks.—Viewed in the light of their mortality alone, these cases are not very encouraging; a death rate of 50 per cent. is not very cheering, though, if these cases had been left untouched, the results might not have been very different in regard to duration of life, for many find an early grave from the effects, immediate and remote, of morbus coxæ.

When we consider the question of relief, however, we may be justified in giving much more credit to the efforts of the surgeon, and in the case of Campbell especially this was clearly established, though, as already remarked, he was not in a favourable condition for ultimate success. In my experience the operation itself has not proved a very deadly one, and need not be shunned were it to afford relief only, though at first sight such a plea may be considered an insufficient justification for such a serious proceeding. It is but fair to add that some surgeons take a more gloomy view even of the direct effects of the operation. For instance, Holmes in his recent work on the "Principles and Practice of Surgery," says, "The operation is a dangerous one; at least a great many patients die after it, many, it is true, not from the operation but from previous disease. Still the number who have died from the direct sequelæ of the operation, has not been small in my experience. Nearly half of the published cases seem to have proved fatal from one cause or another." If to this we add the unpublished fatal cases—and from what we know of human nature, there must be a few such—then our "year's experience" seems a fortunate one. The most telling lessons are derived from failures, and it is much to be regretted that these are not always made known. A treacherous memory is not unknown in the surgical world, especially in regard to failures. The ques-

tion of age is an important one in reference to this operation, and, if some of these patients were rather young, Campbell certainly was rather old. If I were to choose the most favourable decade in life, I should say from 7 to 17 years of age. I had written thus far, when it occurred to me to look at the statistics given by authors, and in Hamilton's "Principles and Practice of Surgery," I found as follows:—"Dr Lyster, of Detroit, has collected 280 cases of this operation, including those collected by Ashurst, Good, and himself, The per centage of recoveries is as follows:—Under 5 years, 58 per cent.; 5 to 10 years, 68 per cent.; 10 to 15 years, 60 per cent.; 15 to 20 years, 38 per cent.; 20 to 30 years, 31 per cent.; over 30 years, 16 per cent.; not stated 33 per cent. In regard to the utility of limb, 103 proved useful, and 3 useless, not stated 33; doubtful 7." He explains that he has not much confidence in the statistics now given. So far as they go, there is a marked coincidence with the opinion I have founded on my own experience, as to the age at which a favourable result is most likely to be attained; while they also demonstrate the increasing tendency to unfortunate terminations as patients advance in years.

In reference to the progress of the disease itself, the best time for having recourse to operation is still a question. That it should be earlier than hitherto admitted is a growing opinion. It is true that they are too often not presented at Hospitals till they have reached a very advanced stage; but when seen earlier, and when the chances of cure by other means are nil, and abscess has formed or recently burst, and the symptoms of displacement are unmistakeable, the patient's general state being tolerably good, then, it appears to me, is the time to operate with some fair chance of saving not only life but limb. In two of the three successful cases herein detailed, the abscess had not burst. I am not prepared to say that operation is unjustifiable at an earlier period; and it has proved entirely successful in my own hands at a much later time, as some of the members of this Society know; so that in desperate cases operation affords this chance, and, as I think these cases show (I mean the un-

fortunate half), it is conducive in no moderate degree to the relief and comfort of the sufferers.

Note.—Since reading this paper, I have accidentally noticed that Dr G. Collins Warren, under the head of “Recent Progress in Surgery,” in the *Edinburgh Medical Journal* for September, mentions that Dr Culbertson has collected cases of excision of joints by circulars sent to medical practitioners in the United States, and also reference to surgical treatises, and medical journals.

His statistics furnish 120 cases of excision of the hip-joint for gunshot injury, and the result is known in all except two. Thirteen recovered, and it is added, “The results given show that this excision cannot be strongly advocated with a view of obtaining useful limbs, but simply as a surgical resource to save life.” Of excision for disease 472 cases are given, and of these 241 were cases of partial excision; *this leaves 231 as probably cases of complete excision*; and the completed cases show a greater mortality than the partial excisions. Dr Warren says, “In regard to the extent of bone removed, we learn that the greatest mortality was shown in cases in which the head of the femur alone was excised, next the head and neck, next head, neck, and trochanter. The most favourable results were obtained when the head and part of the trochanter were removed.” The subsequent part of this quotation is scarcely in unison with the foregoing, and I have not been able to lay my hand on the original; it is as follows:—“There are 127 cases of complete excision for disease. We find here that the mortality is greater in complete than in partial excisions; that it increases as the amount of pelvic bone is removed.” “One might say that the mortality centre is at the head of the femur, the rate diminishing as the bone is removed outwards along the femur, but increasing as it advances inwards upon the pelvis.” Ninety cases of this series recovered. Forty-five per cent. of these obtained “perfect limbs.” Where the inverted commas are used by Dr Warren, I infer that the words are those of Dr Culbertson, quoted from the *Boston Medical and Surgical Journal*, 28th June last.

VII.—ON THE INFLUENZA RECENTLY PREVALENT.

By FRANCIS HENDERSON, M.D., *Helensburgh.*

THE complaint called Influenza, or Epidemic Catarrhal Fever, is caused by a contaminated or poisoned state of the atmosphere.

No other view of its origin can explain the sudden and simultaneous seizure of a large number of persons often completely isolated.

The particular condition of the atmosphere which gives rise to influenza, in the words of the late Dr Warburton Begbie, "deserves to be called specific, because its effects are specific." To the question, How does the air become thus poisoned? no satisfactory answer can be given, although on this point our ignorance is not greater than in the case of other epidemic diseases.

This much may be said, that the opinion most in accordance with our present knowledge is, that the germs of these epidemic complaints, as minute vegetable organisms, are ever present in the atmosphere around us, and that in consequence of some subtle change in their condition, these germs are endowed with new capacities and become the agents of disease and death.

Dr Roberts of Manchester, in his interesting lecture on the "Doctrine of Contagium Vivum," delivered before the British Medical Association at their last meeting, describes the change in these minute organisms as similar to what is called "variation" or "sporting." The "variety" may be a deadly contagium, while the original type is harmless. Thus he says, "There is ground for the assumption that the infective agent in contagious septicæmia is the common bacterium of putrefaction, but modified in such a way as to have become endowed with a heightened capacity for growing in the healthy tissues."* Now, we ask, what is more likely to cause a "modification" or "variation" in the original type of these minute organisms than a *change* in the condition of the atmosphere, which is their natural habitat, and

* *British Medical Journal*, 11th August, 1877.

which alone sustains their life? That such changes in the atmospheric state really occur, and that their occurrence influences the activity of the epidemic *virus*, is proved by the natural history of influenza. For the association of the development and prevalence of this complaint, with recognizable atmospheric changes, or what may be termed weather changes, is most marked,—sudden alterations and great irregularities of weather being certainly favourable to its development. Moreover, during its prevalence in a locality, changes of weather are observed to produce aggravation or diminution of the complaint.

But while this is true, it is most interesting and instructive to note that no uniformity is observed between any particular description of weather and the prevalence of influenza. This proves, or tends to prove, that the connection between influenza and the atmospheric state is *not* one which is determined by temperature, amount of moisture, barometric pressure, direction of wind, or by any combination of the ingredients of weather. The connection seems to lie in this, that the specific atmospheric state which gives rise to (or allows of the development of) influenza is rendered more or less *intense* by weather changes. Of the real nature of this specific atmospheric condition we are at present ignorant, but it is something to *know* that it is a state which is greatly under the influence of weather changes, and we *surmise* that it is a state which causes certain atmospheric germs to put on a new form of growth, a form or “variation” which can produce poisonous effects upon the human body.

There is another fact connected with the natural history of influenza, which confirms the opinion that it is caused by a poisonous condition of the atmosphere. It has been observed and recorded by several writers that during the prevalence of influenza in a district there is a lowering of the general standard of health; thus inflammatory affections exhibit a lower type, and require a modified treatment. Now it is sometimes asked by way of objection to the doctrine of atmospheric poisons, how is it that all are not

affected by the poisoned air which all breathe in common? But if it be true that the health of a community is lowered during the influenza epidemic, then this objection to the doctrine *quoad* influenza is converted into an argument in its favour. *All* are affected, although the characteristic symptoms are not developed in all.

The specific poison of influenza when introduced into the body produces specific results. These are—general depression of the vital powers, lassitude, more or less tendency to shiver, wandering pains, and general soreness; then follows fever of a variable type, sometimes continued, remittent, or intermittent. In severe cases there is an unexplainable loss of strength, quite out of proportion to the duration or degree of the fever, and considerable mental depression and despondency are often observed. The complaint runs a very variable and ill-defined course, and there is a great liability to relapse after partial recovery. These are the essential symptoms of influenza, and in the absence of all signs or symptoms of any other malady may be regarded as *pathognomonic*. In the majority of cases catarrhal symptoms are added, and when severe they increase both the distress and the danger; but these symptoms are not essential. They are sometimes quite absent, and not infrequently, when present, are both slight and short-lived. They bear, we apprehend, much the same relation to influenza that symptoms of the same class do to measles. Commonly the respiratory mucous membrane in some portion or portions of its tract is the seat of catarrh, but occasionally, just as in measles, it is the intestinal mucous surface which is irritated, constituting what the French call *la grippe abdominale*—Gastric Influenza.

There are few epidemic complaints, as it is well known, which exhibit such variety in degree and form at different periods of prevalence. The type of influenza which has existed in this part of the country of late, has not been severe when compared with what is recorded of past visitations. For while, no doubt, it has cut off some of the aged and the diseased, the great majority of those attacked by

it were convalescent in the first or second week. Still there were many others upon whom this specific poison laid hold with a tenacious grasp, and so profoundly impressed the nervous system, that its influence seemed almost as persistent and as difficult to shake off as that exerted by the malaria of the tropics. It is the object of this paper to sketch the behaviour and leading features of the influenza in this neighbourhood, and very specially to draw attention to those cases just referred to, where the sufferers were subject to its depressing influences during a protracted period.

Duration of prevalence.—The duration of an epidemic of influenza is usually about six weeks. The epidemics of 1833 and of 1837 lasted for about this space of time, and in his summary of the recorded visitations from the earliest periods, Dr Copland says “it seldom continued longer than six weeks in one place.” With these facts before us we are met at the outset by a peculiarity of the influenza visitation about to be described; for during the last three years (1874, 1875, 1876), and even up to the present time (September 1877), influenza can scarcely be said to have been wholly absent from Helensburgh and neighbourhood, although in this period there have been times of greater prevalence.

How can this be accounted for otherwise than by regarding the complaint as having been, to a certain extent, *endemic* during this long period, and as having undergone several *epidemic* aggravations? * This theory is supported by the following observation:—

A considerable number of persons had more than one attack of influenza during these three years,—the interval between the attacks being so long, and the other circumstances such, that the second attack could not be regarded as a relapse. Now the general rule is that an individual does not suffer a second attack of influenza during the *same* epidemic, although one attack in no degree protects him from a second in *another* epidemic.

* “Influenza,” says Dr Aitken (*The Science and Practice of Medicine*, 4th ed., vol. I., p. 543), “is both endemic and epidemic.”

Amount of prevalence.—Of the real amount of prevalence there are no means of forming an exact estimate. I have a list of 105 cases seen in the three years, which is made up of the more decided and severe cases. It does not include all the milder cases that came under my own observation. Further, it must be borne in mind that in a large number of the slighter cases of such a complaint the medical man is not consulted. My impression is that in the recent influenza there was a very large number of such cases. Lastly, it remains to be stated that there are four other medical practitioners in Helensburgh to a population (inclusive of the parish of Row) of about 8000.

Connection between prevalence and weather.—One hundred and five cases spread over three years is too small a number to permit any inferences being drawn, either negatively or positively, regarding the connection between the development of influenza and *any particular kind* of weather; but the very fact that for three years influenza has been almost continually present (during all sorts of weather) goes to prove one of the generally received opinions—viz., that there is no uniform connection between any particular description of weather and the prevalence of the complaint.

A striking observation bearing on the relation between influenza and the atmospheric state is deserving of particular attention. Not infrequently, patients who were suffering from influenza *during the same period* experienced relapses *on the same days*. Now as the relapses of influenza during its recent prevalence in this district have had no regular periodicity, this phenomenon must have been the result of the same external cause common to all. The opinion that this cause had its origin in an aggravation of the specific (poisonous) condition of the atmosphere, received confirmation from the fact that these simultaneous relapses were sometimes observed to occur immediately subsequent to some recognisable weather-change. In this connection observation seems to warrant the following statements:—

(a.) Influenza has a natural tendency to relapse even

without the patient being exposed anew to the specific poison, just as in ague.

(b.) The liability to relapse is greater if the air continues to be contaminated with the specific poison.

(c.) The liability to relapse is further heightened if the specific (poisonous) condition of the atmosphere is intensified by weather-change. Thus the *time* of the occurrence of a relapse may be determined, and thus simultaneous relapses in those simultaneously suffering from influenza may be explained.

Infectiousness.—Observation during its recent prevalence bears out the general opinion that influenza is somewhat infectious. Several cases that occurred were evidently set a-going by close and frequent contact with the sick.

Description of the cases observed.—I shall describe three classes of cases of simple uncomplicated influenza—it being understood that this division is entirely for descriptive purposes, and that cases of intermediate grades occurred. The difference between the cases lay more in the severity and duration than in the form or type, although the degree and locality of the catarrhal element introduced minor differences in the symptoms.

1st Class.—Single attacks of Influenza.

2nd Class.—Attacks with two or three relapses.

3rd Class.—Attacks with numerous relapses—protracted cases.

1st Class.—After more or less feeling of unaccountable lassitude and unwellness some feverish symptoms arose, accompanied by a sensation of burning heat of the surface of the body, especially of the palms of the hands. The sensation of burning heat was much in excess of the real increase of temperature. This symptom was observed in most of the cases, and was decidedly characteristic of the onset of influenza. Further, most of these patients were unaware of “taking cold” or of being exposed to its ordinary causes. The actual rise of temperature was not great, and the pulse was only moderately accelerated. The feverishness continued with irregular remissions (sometimes

alternated by perspirations) for two or three days and then subsided, leaving the patient considerably more affected in strength than he had expected. Now, as to the catarrhal symptoms, they were almost always present to some extent. They varied considerably as to situation, but seemed attracted to one part or another according to the patient's predispositions.

(a.) Frontal headache; stuffing of the nose; fits of sneezing occurred, but were not very common.

(b.) Sore-throat, or what may be called more exactly pharyngeal catarrh, was much more frequent. The patient complained of some sore-throat (usually slight); of a raw, dry, muffled feeling in the throat. On examination, the mucous membrane on the back of the pharynx was seen to be red and somewhat swollen, usually in irregular elevated patches. It was sometimes smooth and glazy, at other times covered with adherent mucus of a stringy, whitish character. The arch of the soft palate sometimes partook of the redness, but except in those subject to quinsy the tonsils were rarely affected. A good many patients complained of *great* pain in the throat when nothing more was visible to account for pain than what has been described. This, as well as the fact that the pain intermitted, showed that it was a neuralgia of the throat. Curiously it was not rare to have similar pain complained of across the back of the neck.

(c.) One of the most common, and certainly the most distressing seat of catarrh was near the top of the wind pipe, giving rise to a severe cough of a tickling spasmodic character. Patients so affected were liable to severe paroxysms of coughing, which lasted with scarcely any intermission for fifteen or twenty minutes or even longer until they were quite exhausted. Two or three hours might then elapse without any coughing at all. The paroxysms were usually most severe and persistent about four or five o'clock in the morning. There was usually very little expectoration, but often the paroxysm seemed to end with the dislodgement of a small piece of tenaceous mucus which may have been adhering about the glottis.

(d.) Bronchial catarrh was not common except in those previously the subjects of disease of the chest. In several of the latter the influenza proved fatal. I shall refer again to these cases under the heading of Complicated Influenza. The general and the catarrhal symptoms made their appearance nearly at the same time; sometimes the one, sometimes the other class of symptoms had the precedence. In the class of cases I am now describing, the catarrhal symptoms somewhat outlived the febrile, but it was quite remarkable how suddenly both sets of symptoms abated, and how soon thereafter the patient felt well, excepting the debility.

2nd Class—*Attacks of Influenza with two or three relapses.*—Many patients who had suffered an attack like what has just been described, and who felt themselves rapidly convalescing, sustained a relapse. Sometimes this seemed to be brought on by too early or too great exposure of the convalescent to cold, but generally this could not be blamed as the cause of the relapse, which indeed is a feature and characteristic of the complaint, and in very many cases could not be avoided by any amount of care or by any particular treatment. The first relapse was usually less severe than the primary attack in respect both of the catarrhal and the febrile symptoms. In other respects it was very similar; but attacking an already debilitated patient, it greatly added to the debility. After a second or even a third relapse of still lessened severity, the patients of this class gradually got well—the whole illness lasting from three to four weeks. A somewhat slighter degree of Influenza, though essentially the same in character, frequently presented itself as in the following case:—A patient would call for consultation, complaining of feeling weak, he did not know why. Sometimes he felt too hot; glows of heat came over him several times a day, at other times he was chilly; was considerably indisposed for food, but did not feel sick; on waking in the morning his throat was very dry (sometimes the applicant complained of a troublesome cough, and wished his chest examined). He further related that after some days of these feelings they nearly left him, and he felt

almost well for a few days, and then back came the same symptoms. This state of things, he stated, had been going on for several weeks, and he now began to experience unaccountable weakness and so applied for advice. This history was for the most part narrated by such as were not accustomed to illness of any sort, and had not therefore yielded at the commencement, or whose employments were too urgent to admit of their staying at home or in bed unless compelled to do so. On examination, the throat exhibited more or less of the appearances already described, and only rarely was there any bronchial catarrh.

3rd Class—*Attacks of Influenza with numerous relapses.*—This class of cases, which for brevity I shall call the Protracted Cases, were in many respects remarkable, and it is to them that I wish to draw particular attention. As far as I can learn from the description of influenza in the standard works, cases of this kind are uncommon, and although individual cases having great similarity occur occasionally, and are sometimes not recognised to be cases of influenza, it is certainly rare to meet with numerous cases displaying such characteristic features. On this account it has been thought desirable to give a more particular description of these protracted cases. They are important from the prolonged period of illness and invalidism they entail, and they are instructive as being peculiar illustrations of epidemic disease, while some of the signs and symptoms developed during their course have considerable pathological interest. First, it should be very specially noted that these *protracted cases* cannot be separated by any sharp line from the preceding class. Indeed, the only essential difference between them at this stage was one of duration. At the end of the third or fourth week patients of the second class got rid of the complaint, whereas patients of the third class continued to suffer from relapses.

Before proceeding to describe the further course and symptoms of these protracted cases it will be best to consider their duration. This method will illustrate their gravity and importance, and will render the remarks that

follow upon the course of the complaint less liable to be misunderstood.

What was the duration of these cases? This was so various that it is impossible to give a definite answer. The statement of a few facts will give the best idea of the duration. Of the 105 cases of influenza on my list for the three years (1874, 1875, 1876), I have included 20 in the list of protracted cases. None of these 20 patients were less than six to seven weeks confined to bed, several were from four to six months in bed, and in one case of *uncomplicated* Influenza the patient was seven months entirely in bed. It will be understood that even when able to be out of bed these patients were far from fairly convalescent, most of them had relapses more or less severe over a considerable period, which sometimes compelled a return to bed for a day or two at a time. Moreover, when these relapses had quite ceased the debilitated condition of the nervous system left behind was in some cases a disease of itself.

Course of the Protracted Cases.—During the first two or three weeks it was impossible to say from the character or severity of the symptoms whether a given case of influenza would turn out a protracted case, or whether it would reach convalescence during the third or fourth week and so belong to the second class. The chief data for forming a correct opinion were supplied by a knowledge of the previous condition of health, and of the constitutional tendencies of the patient. As the case continued, the character and features of the relapses somewhat changed, the catarrhal symptoms became less and less marked and gradually disappeared—although, in some cases, they were quite recognisable at the period of relapse, in sneezing, dryness or rawness of the throat, and coughing, as long as the relapses continued to recur.

The relapses commenced as at the first with feelings of depression,—sometimes shivering, with teeth chattering, but this last was rare; generally cold creeping, the features of the face became pinched, and the expression distressed; then came some feverishness, but conjoined, at the com-

mencement especially, with remarkable sensitiveness to cold, a movement of the bedclothes, opening of the door, &c., being complained of. After a dry uncomfortable heat had lasted some time then followed perspiration, which brought with it a sense of great relief. These phenomena might recur several times a day for a day or two, and then cease for a few days, or a single more severe attack of the same symptoms might be followed by several days of complete freedom from them. In either case, the great loss of strength in proportion to the degree and duration of the symptoms indicated the specific and pernicious *influence* of which they were the effects.

The interval between the relapses was quite uncertain. It varied from three or four days to ten days. It tended to grow longer as the case continued, but it was very notable how much its return was determined by *weather-change*. This fact was most thoroughly established by the observation that patients suffering simultaneously from influenza experienced relapses on the same days. As the complaint went on, the febrile reaction after depression was less decided, some parts of the body were hot while other parts were cold. The patient complained of heat which was only slightly, or not at all, indicated by the thermometer; the subsequent perspiration, too, was less, but it often occurred on skin which had a marble coldness. Mental depression and lowness of spirits were not uncommonly present even at an early stage of the illness; but, with the exception of one case, where during a febrile paroxysm the thermometer showed a temperature of about 103·5° F., there was no confusion of intellect or tendency to delirium.

Temperature.—I regret to be unable to exhibit a typical temperature chart. To prepare such a chart several daily observations would be required, owing to the very irregular intermittent and remittent character of the febrile element. During the earlier relapses 101° and 102° F. occurred. The highest temperature noted was about 103·5° F.

The Pulse.—During the earlier febrile paroxysms the pulse varied from 100 to 108, rarely 120. It tended to

weakness, and during the intervals between the relapses it often fell below the normal rate. During the later relapses there was usually very little acceleration of pulse.

Eruption.—In two or three cases there was a general rash over the skin, something like a measles rash, but more dotted—less brilliant, and not so much raised. Sir Henry Holland in his excellent article on “Epidemic Influenzas” mentions, “An efflorescence on the skin frequently attending the complaint as being a very common index of the transference of irritation from the internal membranes to the surface.” *

Besides the symptoms already described, these sufferers from influenza had few other complaints. Some had neuralgias in various regions, but these must be chiefly regarded as complications. The alimentation and general nutrition were *remarkably* little interfered with, and indeed, except during the first two or three weeks at the commencement of the illness, when in some of the severer cases, the febrile symptoms were more continuous, and excepting the periods when the severer relapses were at their worst, the patient took his food with a readiness and an apparent benefit which was quite surprising. In consequence of this, these patients soon began to make up the loss of flesh, which took place during the first few weeks, and after two, three, or four months some of them (although not free of the complaint) grew stouter than was natural to them, while the fresh colour of the lips and cheeks showed that the blood was not impaired in quality. These facts rendered the great loss of strength all the more striking, and they tend to corroborate the opinion that the poison of influenza acts chiefly upon the nervous system. The irregular fever thereby excited is only one of the results of its depressing influence. The loss of strength is much greater than can be accounted for by the degree or duration of the febrile movement, and even is not always in proportion to its severity. This being so it is not surprising, that special symptoms referable to weakness and disorder of the nervous

* *Medical Notes and Reflections*, by Sir H. Holland, 3rd ed., p. 345.

system should be present during the whole course of the complaint, and even after the febrile relapses have ceased to recur.

During the earlier stages of the complaint the poisoned state of the nervous system exhibits itself chiefly by the unaccountable failure of strength, the mental depression and emotional weakness, the extreme sensitiveness of the surface to slight changes of temperature, and by the pulse tending to weakness in spite of a fair condition of nutrition.

Peculiar Cardiac Signs and Symptoms.—In the later stages very remarkable signs were observed in a good many cases. In consequence apparently of a *special* debility of the cardiac nerves, various disorders of the action of the heart resulted, such as hesitating systole, occasional intermissions, irregularity as to interval and force of the pulse. In two cases, several attacks of syncope, and in one case a marked mitral systolic bruit, which was very audible on some days and inaudible on others, and in the course of a week or so finally ceased.* This patient was a healthy young man of 22 years, whose attack of influenza was complicated with pleurisy of the right side. He has now perfectly recovered, and his heart is quite normal. In at least two cases there was dropsical swelling of the feet and legs. In one of these cases the dropsy was considerable, but it disappeared under treatment by iron and diuretics in the course of a few weeks and has never returned, and the patient's heart is *now* (about three years after the illness) perfectly normal. In the second case, which is still under observation, the first sound is weak and muffled, the cardiac impulse is diffused, and the second sound accentuated. In this instance the dropsical swelling of the lower extremities came on in consequence of a good deal of walking while the heart was in this debilitated condition, the patient being otherwise convalescent. This leads me to remark that these derangements of the heart's action did not show themselves until seven or eight weeks after the commencement of the influenza. In several cases they were not present until a

* This case was observed by Dr Messer of Helensburgh.

much later date; other symptoms observed in connection with the disordered action of the heart, were breathlessness and giddiness, and also uneasy feelings in the precordial region. These various cardiac phenomena were, doubtless, due to an enfeebled condition of the nerves of the heart, causing impairment of muscular tone, and consequently diminished contractility or disturbance in the proper sequence of contraction in the several parts of the muscular substance. Extreme prostration of nervous energy is certainly a characteristic feature of influenza, and this implication of the cardiac nerves must be looked upon, as a still more remarkable result of this specific poison.

It might be suggested, by way of explanation, that as the poison of influenza acts primarily upon the respiratory mucous membrane, as well as upon that of the pharynx, œsophagus and stomach—parts supplied by the pneumogastric nerve—it is in harmony with pathological analogy to expect that the reflex influence of this irritation might disturb the heart's action through the cardiac branches of the same nerve. The peculiarity, however, of the phenomena, lies in this, that the cardiac nerves exhibit this debility, *not* at the outset when the poison of influenza most strikingly impresses the nervous system in general, and the nerves of the respiratory tract in particular, but far on in the complaint after the catarrhal symptoms (generally speaking) have ceased. We can offer no satisfactory explanation of this curious fact. The disorder and debility of the heart, as indicated by the signs above enumerated, lasted in the observed cases from two or three weeks to as many months, and without doubt had much to do with the tedious convalescence of some of the protracted cases.

Complications of Influenza.—In persons who had previously unsound lungs or air-tubes the specific catarrhal inflammation of influenza often spread downward, giving rise to bronchitis, sometimes to capillary bronchitis, and occasioned a fatal result. In elderly persons, who were the subjects of chronic bronchitis with emphysema, the influenza was very fatal.

Pleurisy and pneumonia were also observed to come on in the course of influenza as complications. In these cases the patients suffered severe and dangerous illnesses, and made very tedious recoveries.

Phthisis pulmonalis was, at least in one case, evidently developed. It is not a matter of wonder that a long continued, extremely debilitating illness of a febrile character should bring out the weak points of a constitution or develop latent diseases. In this light were regarded various complications which arose in the course of some of the protracted cases, but our space does not admit of further details.

A few words here upon the persons who suffered from the *protracted form* of influenza. They were either (1) in a somewhat exhausted or debilitated state of health at the time of the seizure; or (2), they were naturally of a sensitive nervous temperament, and not robust; or (3), they were persons who refused to give in at the first, continuing their avocations and encountering the usual exposure. Some, no doubt, who tried this plan succeeded, but others were landed in an illness which ultimately confined them to bed for months.

Diagnosis.—The great majority of the cases of influenza are easily recognised, particularly if the complaint is prevalent, and if they are under observation during their entire course. But if a case is only seen casually, or if it be a case without catarrhal symptoms, or if it belong to the protracted class, and does not come under observation until a somewhat advanced stage, when the catarrhal symptoms have passed over or have ceased to be prominent, then the diagnosis may not be easy. In proof of this it may be stated that undoubted cases of influenza, as determined by a knowledge of their course, history, and connections, were mistaken by casual observers for the following complaints:—Hay fever, typhoid, and whooping-cough. This diversity of opinion indicates among other things that cases of influenza, such as have been described as *protracted cases*, have hitherto been rare in this part of the country, a view which is corroborated by a physician of much

experience, and distinguished as an exact observer, who saw one of the protracted cases in consultation, and who admitted that the form of illness was new to him. The patient, who was supposed to be affected with hay fever, suffered numerous relapses during a period of seven to eight months (the last half of which time the patient was confined to bed). These relapses were ushered in by extraordinary fits of sneezing and cold shiverings. They were frequently simultaneous with those of a patient in an adjoining house, who had a very prolonged attack of influenza without catarrhal symptoms—the identity of the illnesses being to a certain extent established by the evidence that both were under the control of the same atmospheric conditions.

As regards the diagnosis from typhoid. The presence of gastric symptoms with irritation of the intestinal mucous membrane causing diarrhœa and flatulent distension, taken along with a high temperature, might produce a morbid picture resembling typhoid fever; but the resemblance would not stand a daily inspection of the picture, or a careful examination into the course of the case.

The difficulty of diagnosing between hooping-cough and influenza was much greater. This was also experienced in the epidemic influenzas of 1833 and 1837, according to Sir H. Holland.*

The cases that came under my observation, where influenza simulated hooping-cough, occurred in children. The diagnosis rested mainly on these two observations:—

(a.) The mucous lining of the pharynx was decidedly inflamed, swollen, red, and more or less covered with thick mucus.

(b.) The course of the complaint was more unsteady than hooping-cough. The child coughed greatly for a few days, then got much better for some days, then worse, and so on. Some of the cases got well too soon for true hooping-cough, and others continued *irregularly* for very long.

Although the cough was just as severe and usually ended with vomiting, the hoop was not present at all, or only very

* Opus cit., page 342.

badly marked. The so-called diagnostic sign of hooping-cough, ulceration of the frænum linguæ, is not here available. This condition merely shows that the child is suffering from a severe, long continued, frequently recurring, choking cough, with a tendency to vomit. The violent protrusion of the tongue is an instinctive effort to relieve the choking, and perhaps also to promote vomiting. The ulceration of the frænum thus indicates that the cough has the above characters, but it does not teach, it need hardly be said, the nature of the irritation (far less the specific character of the virus) which is its cause.

Some cases of influenza without catarrhal symptoms might have a close resemblance to irregular, intermittent, or remittent fever of malarious origin. The presence of well-marked cases of influenza in the locality at the time—the connection between the irregular relapses and weather-change, the greater nervous depression and weakness, in proportion to the degree and duration of the febrile paroxysms, and the extreme sensitiveness of the surface to cold, are some of the principal points which would serve to distinguish the complaints.

Prognosis.—With two exceptions, all the observed cases of influenza, *where the patients were previously in sound health*, ultimately recovered, although in some instances a year or even more elapsed before complete restoration to health. Of the two exceptions, one died and the other is still an invalid. This patient, a lady aged about 54, previously healthy, was first attacked by influenza three and a half years ago, and has been ill ever since. During a period of fully two years she suffered numerous relapses at irregular intervals (rarely exceeding a fortnight). She was little confined to bed, except for a few weeks near the beginning of her illness. Then followed notable weakness of the heart's action, especially feebleness of the first sound and of impulse, accompanied by inability for the least exertion either bodily or mental. This condition continued for more than a year, and finally became so bad that she was compelled to keep her bed during all last winter and spring. Structural organic disease of the heart and blood vessels was apprehended. The heart's action is now (September) greatly improved, but the patient is unable to stand or walk from a

form of want of power (there is no absolute paralysis) which affects all the voluntary muscles of the trunk, neck, and limbs, and which seems to depend on an affection of the spinal motor nerves (sensation is quite perfect). This patient has been examined by several experienced physicians, and no certain evidence of organic disease has been discovered. This very peculiar condition of the nervous system, as well as the preceding cardiac debility, must, in my opinion, be regarded as *sequelæ* of influenza. The issue of this case is still doubtful.

The fatal case was that of a healthy woman, aged seventy, who had severe influenza with catarrhal symptoms lasting from four to five months. During the last two months she suffered from most severe neuralgia, which shifted from one part of the body to another, and was evidently of spinal origin. Although there was no sign of disease in the other organs, she gradually sank. Unfortunately there was no *post mortem* examination.

Treatment.—The first and most important thing the patient should do is to yield to the complaint and retire to bed. Any attempt to ignore it leads to an aggravation of the attack. This was seen in several instances, and is referred to in the preceding pages. The warmth of bed is the best means for lessening the shivering and creeping coldness over the surface of the body. At the outset, the catarrhal symptoms usually demanded attention. The sore throat was often benefited by repeated doses of chlorate of potash and warm poultices. The incessant cough was palliated by conium, chlorodyne, or Dover's powder; by local applications such as sponging the throat with a mixture of tannine, glycerine, and water; by medicated inhalations; and by lubricating substances such as marsh-mallow lozenges. Counter-irritation to the throat or chest in the form of mustard, &c., was never observed to be of the least service in relieving the distressing cough.

As to the treatment of the protracted cases, there was ample time and opportunity for trying the effects of remedies in mitigating or warding off the relapses. Quinine, iron, bebeerine, salicin, and strychnia were severally tried. Of these far the most valuable was quinine. For although it did not in any case stop the illness, still in most cases it appeared to fortify

the nervous system and so helped forward the recovery. When there was great sensitiveness of the surface (a condition almost invariably present in the severe cases) removal of the sheets, so that the patient lay between blankets, was a source of much comfort. The extreme cutaneous sensibility to cold in any form, no doubt, exercised a wide-spread influence over the whole nervous system. Thus what induced feelings of comfort were in this way positively beneficial. During the cold perspirations, rubbing and drying with a hot towel beneath the bedclothes was another simple but useful means of lessening the patient's discomfort. The mental depression and despondency in some cases was very great, and the sufferers stood much in need of encouragement and diversion, which taxed the ingenuity and patience of the physician and attendants to supply during so tedious an illness.

Change of air was observed to have great power in checking the progress of influenza. In some of the protracted cases the affect was most striking. The removal of the patient from this moist and relaxing climate to a dry, bracing, even colder air, so restored the tone of the nervous system that the relapses ceased to recur. But just as in hooping-cough, with which influenza has much similarity in its nature, some examples tended to show that change of air had less influence at an early stage of the complaint. In several very severe cases, which lasted from five to six months, and where in consequence the nervous debility was extreme, the patients felt quite unable to be removed, and shrank from the proposal. Notwithstanding, in all these cases the journey, &c., was borne very much better than either the patient or his friends expected, and the good effect of change of climate was quickly experienced.

In concluding this account of the influenza recently prevalent in Helensburgh and neighbourhood, I would remark that it is not implied that these peculiar and protracted cases have been confined to this locality. I am aware of similar cases having occurred in other parts of the country, but of its comparative prevalence in different places have no means of forming an opinion.

VIII—THE TREATMENT OF CHRONIC PHARYNGITIS.

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THE disease which is the subject of this paper is one which, although not directly menacing to the life of the patient, is yet a fruitful source of annoyance and even suffering, and on that account is of some importance. It is in this country a very common affection, and as such it comes under the notice of every practitioner, but it is not, I think, in all cases recognised as it ought to be. This has been impressed on my attention by a careful study of the cases which have been treated by me at the Throat Dispensary. Since this dispensary was opened in February 1876, the whole number of cases of throat affections treated in it has been two hundred and fifty-five; and of these no fewer than eighty-three have been cases of chronic pharyngitis, with or without chronic enlargement of the tonsils. It is on the basis of these eighty-three cases that I venture to bring the subject before you to-night. I do not, of course, include any cases of acute inflammation in this list, nor do any of the remarks which follow apply to such cases. Before adverting to the treatment I may be allowed to define shortly the disease to which my observations apply.

The natural condition of the healthy mucous membrane covering the fauces and pharynx is that of a soft smooth flexible membrane, pink in colour, and moist with a thin layer of secretion. This moisture is derived from the numerous glands with which the membrane is studded, and which deserve special mention. Apart from the mass of closed follicles of the tonsils, there are two sorts of solitary glands to notice in the pharynx, viz., small racemose glands and solitary closed follicles. These are distributed irregularly over the general surface of the pharynx; but are arranged in groups at the upper part, opposite the posterior nares, where they form a considerable belt of glandular tissue. This has sometimes been termed the "pharyngeal tonsil." In the healthy state the whole membrane is, to a certain extent,

mobile, owing to the loose character of the areolar tissue which underlies it; and this mobility is essential to the feeling of ease and comfort in swallowing, as well as favourable to the strength and clearness of the voice.

Now, the process which leads on to thickening of this membrane is usually, though not always, of a very chronic and localised kind. It is true that cases come up for treatment, with a history of symptoms dating back a few months to a severe attack of diffused inflammation of the fauces, and probably in some of these cases the disease may have begun in this acute way. But in the majority of the cases which I have seen there has been no history of such an attack, and the commencement has been insidious and hardly noticed. Slighter cases of it are, indeed, very apt to be overlooked.

The first change of a pathological nature is a very localised congestion or increased vascularity of a small area. The racemose glands in this area enlarge and give out more mucus. The tissue round the glands thickens from cell growth, and there are thus formed small prominent granules in the otherwise healthy membrane, granules which vary from the size of a pinhead to that of a flat prominence one-eighth of an inch in diameter. The number of thickened areas is at first small, and considerable uneasiness may be felt from the presence of two or three such thickened patches. As the disease proceeds however the number of the thickened granules increases, they merge into each other and form larger nodules and folds of a thick fleshy tumid aspect, which, in the worst cases, occupy the whole surface of the pharynx. At the same time the closed follicles in the mucous membrane enlarge, and assist in forming projections on the surface of the membrane; and with this there is often a chronic enlargement of the closed follicles of the tonsils further adding to the discomfort of the patient.

The symptoms are very varied. Perhaps the most common feeling is of dryness or rawness in the throat, inducing continual attempts to swallow saliva. This swallowing of saliva is accompanied by considerable darting pain at times; but it is curious that pain in swallowing food is seldom com-

plained of. In other instances the shooting pain is felt at other times than during deglutition, and then it shoots upwards to one ear, usually the left. Many patients complain of a continual feeling of "a lump in the throat," which they try to get rid of by hawking and hemming; and much trouble is experienced by others in expectorating the thick tenacious mucus, which the overgrown gland tissue secretes, and which, especially in the mornings, lies like a tough coating over the pharynx. It is not unusual to meet with people who tell you that they are daily in the habit of vomiting after rising from bed, in consequence of their efforts to free themselves of this mucus. No one will think lightly of this last symptom. Another important symptom is the effect on the voice. Owing to the thickened state of the membrane the effort of continued speaking soon becomes tiresome, and the voice tends to become husky, while there is a continual hemming and cleaning of the throat, disagreeable to both speaker and listener. There is no cough, however, in purely pharyngeal disease. A last symptom to which I may allude, but which I need not dwell upon, is deafness from obstruction of the Eustachian tube.

Having given this brief sketch of the chief features of the disease under notice, I wish to state what has been the relative value of the various methods of treatment employed in the eighty-three cases of which I have notes.

I leave out of consideration the effect of merely palliative remedies, such as lozenges of chlorate of potash, capsules of copaiba, or benzoates, and confine myself to the attempts to cure the complaint.

Twelve of the cases were treated with a strong solution of iodine, painted on with a hard brush. Ten of the cases were advised to use various gargles, containing ferri perchloridum, alum, and other astringents. Blisters externally were tried in four cases. Of all these remedies it may be said that they were powerless to remove the symptoms, or to improve the state of the mucous membrane. The gargles, indeed, could not be expected to do much good, for in gargling the throat partially closes, and many of the

thickened patches are thus protected from the action of the gargle.

Discouraged by the ill success of these remedies, I then treated fourteen cases by application of solid nitrate of silver. Here also I was disappointed in the results; for although the inflammatory irritation produced by the lunar caustic was considerable, yet the membrane was not restored to its proper texture, and the disease continued as troublesome as ever. In a very few cases only, where the thickening was very localised and very slight, did the silver nitrate bring about a little improvement. It was evident, however, that its action was not that of a caustic, but that of a simple astringent. In cases complicated by chronic enlargement of the tonsils it was of no use.

I then resorted to the caustic recommended by Morell Mackenzie for enlarged tonsils, viz., equal parts of caustic lime and caustic soda in powder. This was applied, moistened, on a slip of wood like a penholder, and its action was confined carefully to the spots of the mucous membrane actually thickened. Twelve cases were treated with it. The result was good; the nodules were effectually destroyed, and even tonsils of some size could, by twelve or fifteen successive applications at intervals of a few days, be reduced to the level of the pillars of the fauces. Its use, however, was attended with various drawbacks. In the first place it caused great pain; and immediately after it was applied there was invariably a profuse expectoration of tough mucus necessitating continued gargling with water for a few minutes.

Finding this very troublesome, I fell back on the plan recommended by Dr Carl Michel in the *Deutsche Zeitschrift für Chirurgie*, 1873, namely, the application of the actual cautery. Dr Michel uses the galvano-cautery, and the expense and inconvenience which the use of the battery involved was, from the time when I perused his paper in 1874, an obstacle to my following in his steps. It struck me however that it might be possible, in a dispensary, to employ much simpler means than he used. Accordingly last March I got a blacksmith to make

me some slender cautery irons of various shapes, which I simply heated in the fire in the room, and applied without more ado to the throats of the patients. The effect was quite what could be wished. Not only were the thickened patches easily and completely destroyed by the cautery, but its use was attended with but trifling pain, and there was absolutely none of the former hawking and expectoration of mucus, which the soda-lime caustic occasioned. A little swelling often followed the use of the hot iron, reminding the patient, for twenty-four hours or so, of what had been done; but I have never seen any more serious disturbance after it. This feeling of swelling and dryness was easily combated. A little bit of fresh butter flavoured with lime juice, allowed to melt in the mouth, lubricated the throat and gave relief after the burning. No other palliatives were necessary, and the patient was told to follow his usual habits as to eating and drinking, etc.

In this way I have now treated thirty-five cases of chronic pharyngitis, and I may confidently say, that I have not yet been disappointed in any case in which the treatment has been fairly tried. The patients themselves have borne testimony to the marked relief which each successive application has given. Some of the cases were complicated with enlarged tonsils, and these were speedily reduced by a few applications of the hot iron.

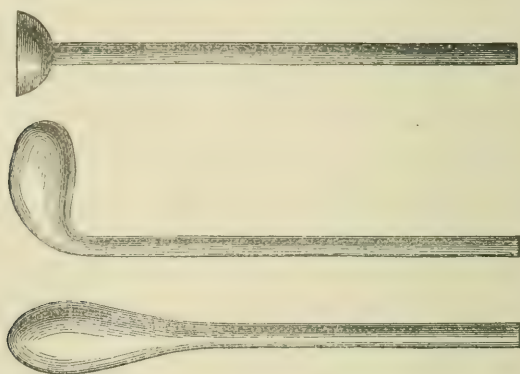
Soon after commencing this treatment I was able to get from Messrs Mayer and Meltzer in London, a convenient form of galvano-cautery which I have had in use for several months at my house, but though it works well and reliably, it is not more effectual than the simple iron cautery which I first had and still have in use at the Throat Dispensary.

The cautery is best employed at a dull red or black heat; and a week should elapse between the applications, to allow the white eschar to disappear. The application should not be made at random all over the pharynx. Each spot which is thickened must be sought out and separately touched, and for this it is convenient to have cauteries of different shapes. In this I differ from Dr Riesenfeld, as reported in the *Lancet* of August 11th. He uses a knife-shaped cautery, with which he makes

vertical strokes over the surface. This procedure seems to me to be rather severe, and to tend to sacrifice sound membrane as well as that which is diseased. The nodules are in a few cases difficult to detect and reach, as they may be hidden behind the pillars of the fauces, or above the level of the soft palate; but to any one who uses the laryngeal and rhinoscopic mirrors the difficulty is never very great. Perhaps the most difficult part to cauterise is the nasal half of the pharynx, and for this purpose I have had a bent iron made.

As to the number of times of application necessary, I have found it to vary from four in the slighter to ten or twelve in the more severe cases with enlarged tonsils. The ultimate result is, where the applications are carefully made, very satisfactory.

This may appear to some a severe remedy for a slight disease, but those who have suffered from it have assured me that they felt the applications of the iron to be a mere bagatelle as compared with the continual annoyance of the thickened state of the lining of the pharynx.*



* The cauterization irons are of thick wire, about fifteen inches long; and at the point there is a tapering bulb of say a quarter inch thickness at the end. The handle end is bent round in the form of a hook, to prevent the cauterization from slipping out of the hand when heated. No other handle or appliance is necessary.

IX.—CASES OF HYSTERIA IN THE MALE.

By WILLIAM N. MACCALL, M.D., *Manchester.*

THE comparative rarity of such cases may lend interest to the following notes for the readers of the *Journal*, especially the juniors, many of whom, if I may judge by my own experience, may never have met with an example:—During the past ten years of busy work, both in private and in hospital practice, I can only recall four cases, and, by a curious coincidence, these all presented themselves within a month. To speak of hysteria in men seems like adopting a kind of *lucus a non lucendo* nomenclature. The name is undoubtedly fully justified in the female by the intimate relation, direct and indirect, which exists between the uterine functions and nervous disturbances, especially such as are associated with emotional causes. But, on the other hand, some of the forms of that protean malady—hysteria—do undoubtedly present themselves in members of what is called the sterner sex, an epithet which some of the modern advances towards a perfect civilization would invest with a tinge of irony. Examples are uncommon, because the peculiar mobile nervous temperament which predisposes to such manifestations is rare in men, and even where it does exist, a sense of shame and the fear of ridicule exert a powerful controlling influence. In a man, hysterical symptoms are regarded as unmanly or ridiculous, and meet with, at the best, a kind of contemptuous pity; in a woman they are looked upon as more natural, and elicit sympathy and tenderness. The morbid craving for such sympathy which exists in certain minds is one of the elements in the causation. Whether the full attainment of “woman’s rights” will include an exemption from hysteria might be a problem for the speculative.

We should expect the male subjects of hysteria to be men of unusually emotional temperament—effeminate in the ordinary sense—and possibly with their nervous power lowered by illness or mental suffering. The following cases are given in the order in which they presented themselves, and may, without further comment, be left to speak for themselves:—

CASE I.—*January 9, 1877.*—Sent for to see Mr B., aged

25, married, who was said to be in a fit. I had been attending him for several weeks for periostitis of the lower jaw, ending in abscess—a severe attack, during which he had suffered much, and become extremely enfeebled. He had now been going about for a few days, still suffering at times from violent neuralgic pains, due to a bad tooth, which had been the cause of all his illness. He had been strongly urged to have this out, and several times had actually sat down in the dentist's chair, and come away as soon as the forceps were produced. The attempt to administer nitrous oxide had a like result. All through his illness he bore pain badly, and when it became severe he got almost frantic—dashing himself about, pulling his hair, &c. Twice before I had been sent for to see him “in a fit,” but each time it was over before I arrived. This evening I found him in the kitchen, surrounded by alarmed relatives, neighbours and servants. He was seated in a chair, held by several, leaning back rigidly, with closed eyes and apparently unconscious. As I entered, some one said, “he’s off again.” He became opisthotonic, his limbs quivered and then were violently agitated, and there was an occasional gulping or choking sound. They said this had been going on for an hour or two, with intervals of quietness, but that he had not been conscious from the beginning. On examination I found that the unconsciousness was only apparent—the closed eyelids were quivering, the pupils equal and reacting naturally; the limbs resisting, with conscious purpose, any attempt to move them, and the facial play showing consciousness of my words and presence. I at once said it was nothing serious, and that he must be taken into the dining-room and left to his father and mother and myself. I was assured this was impossible, as it had required three men to control him. I quietly but firmly told him he was now better, and that he must come with me into the room, and then taking his arm, led him, after one or two slight efforts at resistance, into the room. He still kept his eyes closed, and affected unconsciousness of my words. In the room I laid him on the couch, where he at once went “off again;” but having now got rid of the spectators he was left to recover himself, which he speedily did, and again

lay quiet with closed eyes. In talking to his mother I happened to say, "We must have this tooth out;" when he at once started up, sobbing violently, clinging to her, and crying out, "No, no!" With some difficulty he was calmed, and he then recognised me by name. Finding that his attack had supervened on a severe paroxysm of pain, I gave him an opiate. Two hours later I learnt he had had one or two slight attacks of a similar nature, and as his pain, though less, was not gone, the opiate was repeated. Next day he was better, and the symptoms did not recur. The previous "fits" which I had not seen were said to have been of a similar nature, but not so severe, and lasting a shorter time.

CASE II.—*January 10, 1877.*—Mr S., aged 30, married, was brought to my house in a cab, late in the evening, by his wife and a friend. They had called by appointment at his office—found him alone, very drowsy, rambling in his talk, and saying he had poisoned himself. On the way up he seemed to become more drowsy, and finally unconscious. He was supported into the room—his eyes closed, and face tranquil and expressionless. He was seated in a chair, but fell down, and was then laid on a couch. Face was slightly flushed, pulse a little quickened, respiration natural, limbs flaccid. The eyelids quivered slightly, the pupils normal in size, equal, and reacting readily to light. While I examined his eyes, the tears freely flowed over his cheeks. I was informed that his business affairs were much embarrassed, and that domestic matters were also troublesome. He had in consequence been desponding and irritable, and several times threatened suicide. The incongruity of his symptoms made me disbelieve in his having taken poison, but to be on the safe side, and as a means of treatment on any theory, I said I would give him an emetic. I attempted to give him some sulphate of zinc, but he clenched his teeth so firmly that very little got down. I then tried to pass the stomach pump, and once actually got the tube into the stomach, when with his right hand he wrenched it out, and immediately relapsed into drowsiness. I then said aloud, "Go for Dr T., and we shall soon pass it." Soon after the messenger had gone the patient's limbs were convulsively thrown about;

he opened his eyes, stared vacantly, and asked where he was. He then burst into a violent fit of hysterical sobbing. Before Dr T.'s arrival he was walking about apparently all right, but very emotional. Next day his wife called and told me he was all right. She also said that when annoyed or irritated at home he was subject to attacks "just like those of a hysterical girl."

CASE III.—*January 23, 1877.*—Called at 2 A.M. to see Mr B., aged 40, who was said to be dying. I found him surrounded by friends and relatives, who had been with him several hours, during which he had had a succession of "fits." I stayed and watched several of these attacks, which were of the most typical hysteric character—mingled laughing, crying, incoherent talking, globus, &c., alternating with violent convulsive twitchings, and apparent but not real unconsciousness. I was informed that on the previous day he had had a violent quarrel with a relative, which had left him very nervous and excited, and on going to bed these attacks began. I told the relatives that the attacks were not dangerous, and that they need not stay. Prescribed potass. oromid. gr. xx. every four hours, unless asleep. In the morning I found he had slept fairly, but had had several slight attacks; complained of dull headache.

January 24.—No attacks, but very desponding, and with frequent outbursts of weeping; afterwards he kept well. My former partner informs me that he attended this patient about ten years ago for a similar hysterical attack. He has always been a very nervous man, and has lately had a good deal of business trouble.

CASE IV.—*February 7, 1877.*—Called at midnight to see a gentleman in a fit. On the way I was informed that he was a guest at a party in the house. At supper, which he partook of moderately, he was in very good spirits; began laughing violently, ended by sobbing, and finally went off in a fit. I found him lying on the floor, apparently violently convulsed, and restrained by some of the guests. On examining I found there was no real unconsciousness, and telling his friends to let him alone, I soused him well with cold water. He came to directly, and, after a fit of crying, was all right, but somewhat ashamed of himself. His friends told me that he was always

nervous and excitable, and had only recently recovered from a severe illness, which had left him much more so. As far as they knew, however, he had never suffered from an attack of this kind.

Reviews.

I.—CLINICAL LECTURES ON DISEASES OF THE LIVER, JAUNDICE, AND ABDOMINAL DROPSY, including the Croonian Lectures on Functional Derangements of the Liver. By CHARLES MURCHISON, F.R.S. Second Edition. Longmans, Green & Co. London, 1877.

WE gladly welcome the second edition of this work, and have read it with fresh interest and pleasure. It is a great storehouse of carefully-observed and well-recorded facts. Like all books, that pass through successive editions, it has somewhat exceeded its former limits, but the new matter has been so skilfully incorporated with the text, which has in great part been recast, that it still maintains its place as the best clinical exposition of diseases of the liver, of which English medicine can boast. This second edition has been somewhat delayed, Dr Murchison, with a just regard to his own reputation, being desirous of incorporating the labours of his contemporaries in a full and consecutive manner. The value of the volume has been much enhanced on this account, as well as by the addition of the three Croonian Lectures on Functional Derangements of the Liver. Ninety new cases are added in illustration of the text, and a chapter on rare forms of enlargement appears for the first time. There are no very radical changes in the text. The author still adheres to his classification of the diseases of the liver into *painful* and *painless*, setting aside the older classification of Bright of *smooth* and *irregular*, on the ground that enlargements which are usually smooth, such as amyloid disease, are sometimes irregular, and enlargements that are, as a rule, irregular, such as cancer, may be smooth. Similar objections, however, might be urged against his own classification, and within the last twelve months we have observed at least two cases which Murchison classes under the head of *painless*, attended by considerable suffering. As a matter of clinical convenience,

however, his classification is to be preferred to that of Bright, as it often happens that so little of the liver is exposed that it is impossible to say, during life, whether it is smooth or irregular; and, moreover, it is not always easy to differentiate irregularities in the abdominal parietes from nodules on the organ beneath.

The lecture on hydatid disease is an admirable clinical study, well illustrated by cases. This affection is exceedingly rare in Scotland, and Dr Murchison ventures a remark as to whether this may not be due to the non-importation of foreign sheep into that country. In Glasgow, for instance, Dr Scott Orr, on searching the records of the Royal Infirmary, found only three cases, one in the mamma and two in the liver; while in more recent times in the same institution, only three cases, all under the care of Dr Orr, have occurred. We are inclined to think, however, that this is an understatement; cases may have been overlooked, as the diagnosis is not always such an easy matter as it appears on Dr Murchison's pages.

When left to itself, hydatid of the liver is, in most instances fatal either from rupture or changes induced in neighbouring organs; but if we may judge from Dr Murchison's tables, the treatment is so easy and satisfactory that the great majority of cases may be saved. In the old operation for evacuation of the cyst by free incision, the great dangers were acute peritonitis and suppuration of the cyst, and to obviate these Murchison advocates the method of puncture with a fine trocar. The cases quoted prove conclusively that it is by no means necessary to evacuate the whole of the fluid; the removal of a few ounces even in large cysts effecting the desired result. All authors do not agree in this, however, and in a recent French memoir on Hydatid disease by Dr Magnant, as thorough evacuation as possible is strongly advocated. But as Murchison's method entails less risk, and has stood the test of experience, it is to be preferred. A second tapping is said to be rarely required. One hundred and three cases are cited, in which the treatment was followed; eighty were successful, a few, however, being tapped twice; in sixteen the cyst suppurated after operation, and free incision had to be resorted to, but all did well. Death resulted in seven of the one hundred and three, from peritonitis, collapse, and exhaustion. These results certainly look very satisfactory. We must confess, however, that even this operation is not free from grave danger, and in the only two cases in which we have had the

opportunity of seeing it carried out, such severe symptoms ensued as to cause considerable anxiety. It is well, therefore, to use all precaution. Murchison argues against the use of the aspirator, as he has seen the suction cause much pain, and in one or two cases blood has come away in the liquid. It would seem as if unnecessary force had been used, but if only a moderate degree of it is employed the additional safeguard to the entrance of air is a strong argument for the use of the aspirator. The medicinal treatment of the disease is set aside as almost hopeless.

The views enunciated with regard to the relation of hepatic abscess and dysentery are substantially those of the first edition. The doctrine first promulgated by Budd, that the primary lesion was in the colon, and that by purulent absorption inflammatory action was set up in the liver, that, in fact, the hepatic abscess was pyæmic, has hitherto received the support of the great majority of the profession in this country. Murchison withholds his assent to this doctrine, and with what appears to be good reason. The fact that pyæmic abscesses are, as a rule, small and multiple; that in many cases the symptoms of abscess have long preceded dysenteric signs, that patients have recovered from hepatic abscess without there being the suspicion of dysentery, and that many *post-mortem* examinations have demonstrated the presence of large abscess without any ulceration in the colon, either recent or remote—all these place it beyond a doubt that in many cases the abscess is not a secondary formation. This is a very vital question to settle, and the view that is taken of it must have important bearing, both on prognosis and treatment, for if the abscess is pyæmic in its origin the prognosis must be grave to the last degree, and the treatment a kind of forlorn hope. We are quite disposed to join issue with Murchison, who argues his case with much ability. In a recent article in the *Practitioner*, Sir J. Fayrer also inclines to regard them as independent of each other, though they often co-exist.

The author's views as to the theory of jaundice may be gathered from the following quotation:—He says, "The only pathological difference between jaundice from obstruction and jaundice independent of obstruction of the common bile duct is, that in the former case none of the bile secreted by the liver can escape from the body by the fæces, and consequently all that is secreted after the gall bladder and biliary passages are distended is absorbed into the blood, the quantity being far too great to undergo the normal

metamorphoses, while in the latter case the bile passes into and is discharged from the bowel as usual, but that which is absorbed, which in quantity may not exceed that which is absorbed in health, remains unchanged in the blood." From this it will be inferred that Dr Murchison would reject the theory of jaundice from suppression; indeed he argues, at considerable length, that the liver manufactures both the bile pigment and bile acids, and that suppression of the function of the organ could never give rise to jaundice. He is evidently inclined to believe with Frerichs, that the bile acids are normally absorbed into the blood, but that in certain conditions, either by nervous agencies or poisons, they are not sufficiently oxydised, are converted into bile pigment in the blood, and the result is jaundice. All this question, however, is still *sub judice*.

Under the head of atrophy he describes several conditions which, in their aetiology and anatomical characters are quite distinct, but where the symptoms are so similar that it may be impossible to distinguish them during life. These conditions are cirrhosis; hyperæmia from obstructed pulmonary or cardiac circulation, in which the liver is first enlarged and then atrophies, and may even become granular on the surface; atrophy without increase in the fibrous structure of the organ; and the "chronic atrophy" of Frerichs seen in cases of simple or cancerous ulcerations of the stomach and intestines. In all these cases the prominent symptoms depend on portal obstruction. In true cirrhosis he says there is in nearly all cases a history of "dram drinking," and he lays stress on the fact, that it is specially apt to ensue in those who drink spirits undiluted, and on an empty stomach. The cases of cirrhosis in children he inclines to regard as instances of more chronic atrophy, and can sometimes be traced to inherited syphilis.

There is little change to note in the treatment laid down in the first edition, except the frequent exhibition of chloride of ammonium, especially in amyloid and fatty enlargements, a treatment which has received a good deal of attention in Germany, and has met with a tolerable degree of success.

The lectures on gall stones and abdominal dropsy are valuable for their differential diagnosis.

Coming to the Croonian lectures we pass at once into the region of surmise and conjecture. The whole subject of functional derangements is very obscure, and the number and conflicting nature of the theories that have grown up around them must have made it a very difficult matter indeed to

evolve anything like order from such a chaos. If Murchison has laid down lines on which others may build, he has achieved a work of no little merit. He has certainly done his best to master the subject; the lectures are very erudite, but written with all his accustomed grace and vigour. These lectures have been so recently noticed in our pages that we do not delay longer over them.

We commend this second edition as well worthy of the author's fame, and quite indispensable to any one who wishes to gain a thorough knowledge of the diseases of which it treats.

II.—ST GEORGE'S HOSPITAL REPORTS. Edited by W. H. DICKINSON, M.D., and TIMOTHY HOLMES, F.R.C.S. Vol. VIII. 1874-76. London: J. & A. Churchill. 1877.

ALTHOUGH unusually late in publication, the present volume of Reports is on that account none the less welcome. It contains, besides the elaborate reports of cases treated in hospital, which have in previous volumes moved our admiration at the industry of the compilers, numerous papers of more than transient interest in the several departments of medical science.

The first two papers, "The Physical Development and Proportions of the Human Body," by Charles Roberts, F.R.C.S., and "Notes on the Development and Growth of Boys between thirteen and fourteen years of age," by G. Garrick Street, F.R.C.S., are almost purely statistical, and are as difficult to grasp and as unsatisfactory in their results, as papers of that character usually are. Mr Roberts's paper contains the fullest statements we have yet met with as to the growth of the different parts of the body at different ages, the relation existing between age, height and weight, and the girth of the thorax. His results, in most instances, confirm, in a remarkable manner, those obtained by Quetelet, but are the more valuable in that the latter took his weights and measurements from only ten individuals at each age, while the tables here given show the results in many hundreds, and in some cases even thousands of observations. With regard to chest-girth, which has received much attention from all writers on anthropometry, Mr Roberts's figures are notably larger than those of his predecessors; thus, at all ages after fourteen his averages exceed those of Quetelet by nearly an inch, and are still more remarkable when com-

pared with those of other observers. Thus, among nearly half a million of men examined for military service during the War of the Rebellion in the United States, at no age did the mean girth exceed 34.76 inches,* while Dr Harrison's table† gives the average circumference at sixteen, seventeen, and eighteen, as $27\frac{1}{2}$, 28, and $27\frac{1}{2}$ inches, respectively. Mr Roberts's table, on the other hand, gives 35.5 inches as the mean measurement at all ages from twenty-one to thirty, and at the ages noted above gives the figures 31, 32.5, and 34. If these figures are reliable (and we see no reason to doubt them), instead of the physical deterioration of the race we sometimes hear of, there would seem actually to be an improvement in physique going on.

The author seems to have accepted Quetelet's measurements of the neck without question. Had he investigated the matter for himself we do not doubt that he would have found such measurements extremely variable, the length of neck depending on the horizontal or oblique position of the upper ribs.

Dr Barnes contributes "A Clinical Study of Retro-Uterine Tumours," giving details of cases of retroversion of the gravid-uterus, extra-uterine foetation, retro-uterine hæmatocele, retro-uterine abscess, dermoid cyst, and fibroid outgrowths from the uterus. One case of the last-named affection was believed to be ovarian, and the tumour was removed by gastromy, but the patient died of peritonitis thirty hours after the operation. Dr Barnes makes an anatomical observation of much clinical interest with reference to Douglas's pouch; he notes that "the sack is fully an inch deeper on the left side than on the right. The shallowest part is behind the right broad ligament; from this part it dips to a lower level behind the uterus. But it descends considerably lower than this behind the left broad ligament.

. It follows from this disposition that smaller effusions or solid bodies, always finding accommodation in the left pouch, are felt, on vaginal and rectal examination, to be on the left of the uterus, and not directly behind it. Hence, when we make out a firm body behind the vagina, and to the left, we must not hastily conclude it is the left ovary or a simple effusion in the left broad ligament" (p.59).

In a valuable contribution "On Ozoena," Mr Warrington

* Statistics, Medical and Anthropological, of the Provost Marshall-General's Bureau. Vol. I. Washington, 1875.

† Quoted in Aitken's Practice of Medicine. 5th Edit. Vol. II., p. 216.

Haward gives his experience of Rouge's method of getting at the nasal fossæ. He describes the procedure in the following words:—"The operation consists of separating the soft parts of the nose from their bony framework, by incisions through the mucous membrane, where it is reflected from the upper lip on to the gums. The lip and nasal cartilages are then lifted completely up towards the forehead, when the nasal sinuses can be explored with the greatest facility." It will be seen that the method is well adapted for the removal of necrosed turbinated bones but that it may be also made available for the removal of large or numerous nasal polypi. The operation is not, however, entirely without danger, as Dr Rouge records a case where a considerable portion of the ethmoid bone was removed, and death resulted from meningitis.

After the prolonged and unsatisfactory discussions which have recently taken place as to the differentiation of croup and diphtheria, Dr Fox's paper on these diseases will be read with special interest. He believes thoroughly in the existence of the two diseases as separate entities, and gives the following points in which they differ:—"1. Croup attacks children chiefly between the ages of one and seven. Diphtheria attacks all ages indiscriminately. 2. Most male children die in croup; most females in diphtheria. 3. In croup, cold and moisture are the main causes; in diphtheria they may also be the exciting causes, but often this is not so, it is doubtful if it spreads except by contagion. 4. In croup there is not, and in diphtheria there is, enlargement of the cervical glands. 5. In croup defervescence occurs on the fifth day; in diphtheria from the sixth to the twelfth, or fourteenth. 6th. In croup there are laryngeal symptoms from the first. In diphtheria these symptoms only manifest themselves after three or four days. 7. In croup albuminuria is rare; in diphtheria it is the rule. 8. In croup there is no epistaxis or bloody expectoration; in diphtheria these are common. 9. In croup there is not, and in diphtheria there is, fætor of the breath. 10. In croup there is no depression of the heart's action, while in diphtheria such depression is common. 11. In croup there is no enlargement of the spleen; in diphtheria enlargement is usual. 12. In croup there is no increase in the excretion of urea, while in diphtheria there is an increase. 13. Croup is not followed by paralysis; diphtheria is often followed by paralysis of the palate or limbs, or both. 14. In croup death is by asphyxia; in diphtheria by toxæmia" (p. 152).

Mr Holmes's paper "On the Amputation-Book of St George's Hospital, No. II.," will be interesting to hospital surgeons, as a contribution to the subject of hospitalism, and as treating of the use of the antiseptic method in cases of amputation. In the latter respect, however, the value of the paper is by no means great, as the author himself admits that he does not carry out all the details of Lister's treatment, and as he does not inform us how far he deviates from the rules of antiseptic surgery, or supply us with a description of his mode of dressing the stump, we do not think that any unprejudiced statistician would feel justified in including the cases among those strictly antiseptic. Mr Holmes seems, indeed, to be in the same unsettled state with regard to the germ theory and Lister's treatment as the majority of London surgeons; anxious to try the method, and yet not willing to follow out the details in their entirety, "damning it with faint praise," and at the same time insisting on the great success which has attended their particular modification of it. The removal of Mr Lister to London will have one great advantage; it will give our metropolitan contemporaries the opportunity of seeing cases treated by the master himself, on the principles which he has so thoroughly, conscientiously, and laboriously worked out; and, if we mistake not, will open their eyes to the fact that in not one of the London hospitals has the system received that patient trial which all have acknowledged that it deserves. Mr Holmes's remarks on hospitalism are more worthy of confidence, and form an able statement of the case on the part of our large city hospitals in opposition to the damaging conclusions of the late Sir James Simpson, and of Mr Erichsen; although it must be admitted that in discussing the mortality after amputation of the forearm, he shows a more than laudable anxiety as to the exclusion of cases dying from causes remote from the amputation. If all our hospital statistics were to be selected with such strict reference to the circumstances of the cases as the author seems to suggest, the mortality would, in some years, be reduced almost to nothing, and there would be some hope of the realization of the dream of a Glasgow surgeon as to the filling up of the broken arches of the bridge of Mirza.* The cases of amputation here recorded number five hundred, and the author gives details of nearly all the fatal cases. The mortality over all

* Hospital Report for the Year 1870-71. By James Morton, M.D.,
Glasgow Medical Journal, Vol. IV., N.S., p. 209.

was 31·6 per cent., as compared with 32·1, the mortality of amputations at the Glasgow Royal Infirmary during twenty-five years, as recorded by Dr M. Thomas in this *Journal* (Vol. VII., N.S., p. 208). At first sight, therefore, the bill of health of St George's Hospital would seem to present a better appearance than that of the Glasgow Hospital, but a closer investigation shows that this appearance is fallacious. Of the cases treated at St George's Hospital only 29·2 per cent. were cases of injury, while in the Glasgow Infirmary these amounted to 41·43 per cent. of the total cases; now, as in the latter hospital the mortality in amputation for disease was only 21·9, it follows that with the same proportion of operations for disease as at the London Hospital, the mortality would have been only 27·05 per cent. We quote these figures not for their intrinsic value, but in order to show that statistics which give only the general average mortality in any hospital are likely to give very erroneous notions of the success of treatment in that hospital.

III.—ON THE CURABILITY OF TUBERCULAR AFFECTIONS: CLINICAL LECTURES ON THE CURABILITY OF ATTACKS OF TUBERCULAR PERITONITIS AND ACUTE PHTHISIS. *By* Dr M'CALL ANDERSON, *Professor of Clinical Medicine in the University of Glasgow.* Glasgow: James Maclehose. 1877.

THE little book before us consists of two lectures, and each lecture of two parts. There is a preliminary dissertation, formed by lengthy quotations from the standard authors, which more or less completely describes the acute forms of tubercular disease and their prognosis. To this is opposed a record of cases culled from the author's experience, and intended to prove that tubercular disease may be "cured." In one word, the author's cases and the selected literature on the subject are stated in antithesis, and we are invited to "look on this picture and on that." It is unfortunate that quotations placed in this light should be liable to criticism, and yet it is impossible to avoid the observation that in several instances rather important portions of the context have been omitted. For example, the prognosis of tubercular peritonitis is taken from Sir Thomas Watson's description of chronic peritonitis, although Sir Thomas states that he is unable to determine whether the granules in the peritoneum are truly scrofulous, *sui generis*, or spherules of coagulable lymph. In a similar way, in Dr Williams' description of pneumonic phthisis, after four pages of quotation, the last

seven lines of the paragraph are omitted. It is true they are not descriptive, but why "this form of acute phthisis, although generally rapidly fatal, is not universally so," should find no place in the prognosis is rather obscure. It is at least more hopeful than any of the opinions mentioned.

Had the author not suggested the idea we should have forbore to criticise his diagnosis of the recorded cases, but as he "does not wish to assert positively that all his cases are undoubted illustrations of true tubercular disease," we may be permitted to share his doubt. The temperature curves, and even the days of crisis, resemble those of other acute diseases, while the diurnal variations in most are far from striking.

In its best points the book can scarcely be said to be complete. It is not sufficiently dogmatic for a summary, nor sufficiently full for a rational exposition. Thus, although considerable importance is attached to the means of reducing the temperature, no special reason is given for the procedure; and the observations of Schultze and others receive no notice.

Setting aside all faults of execution, we scarcely consider it advisable to "raise the question" of the curability of tubercle by a class of cases the diagnosis of which Niemeyer pronounces to be always difficult and often impossible. The evidence of Williams and others, to the effect that such cases may become chronic, is, we think, of more real value than the absolute "cures" of the present author. We find in his pages no attempt to explain the destiny of the tubercular deposit, and we distinctly take exception to the idea of its absolute disappearance.

There is abundant evidence of the curability of tubercle; and that evidence is based upon undoubted physical signs, and the yet stronger testimony of *post-mortem* examination; but we cannot regard the present work as in any substantial light a contribution to the literature of the subject.

IV.—ON IDIOCY AND IMBECILITY. *By* WILLIAM W. IRELAND, M.D., Edinburgh, *Medical Superintendent of the Scottish National Institution for the Education of Imbecile Children at Larbert, Stirlingshire. Author of the "History of the Siege of Delhi," "Studies of a Wandering Observer," etc.* London: J. & A. Churchill, New Burlington Street. 1877.

IN English medical literature there is no lack of books on insanity in which idiocy and imbecility are discussed at greater or less length; but hitherto, although there have been monographs, such as the valuable ones of Dr Langdon Down, on particular questions related to these defective mental conditions, no special treatise has been devoted to their consideration. There was, however, a real need of such a work. Of late years increased attention has been given to the care and training of idiots and imbeciles, as is evidenced by the now considerable number of idiot asylums and training schools that have been erected throughout the country, and particularly in England. A deeper interest has also been taken in them physiologically, as manifesting rudimentary forms of mind, and throwing additional light on the abstruse and difficult questions connected with cerebral and mental development. It was desirable, therefore, that, as in the volume before us, a full view of the subject, in all its aspects, should be presented for the information of those who are interested in these unfortunate members of the community.

Dr Ireland brings to the performance of his undertaking a matured experience and a well-cultivated mind. His knowledge of modern languages is unusually extensive, and he is thus enabled to embody in his work the fruits of the most recent researches of Norwegian and Italian, as well as of French and German writers. He has also been favourably known to the specialty to which he belongs, as an industrious and trustworthy observer; and his contributions to medical journals, especially the *Journal of Mental Science*, have commanded attention, both in this and other countries. And, more particularly, the medical charge of the institution at Larbert, which he has held for some years, has supplied him with material for original study, of which he has taken full advantage.

The volume begins with a chapter on the definitions of idiocy and imbecility, in which idiocy is defined to be "mental deficiency or extreme stupidity, depending on mal-nutrition or disease of the nervous centres, occurring either before birth or before the evolution of the mental faculties in childhood." Chapter second treats of the statistics of idiocy in various countries. It can

scarcely be said, however, that the author helps us much to a knowledge of how we in this country really stand in comparison with other peoples. But this is no fault of his, as he supplies us with abundant tabular information from the published records of the United Kingdom, France, Germany, Switzerland, Sweden, Norway, Denmark, and the United States: it is due to the fact that much greater care has been taken to obtain trustworthy returns of the full number of the idiotic class in some of these countries than in others. How difficult it is to get at the real state of the case in a question of this kind will be understood when we mention that it has not yet been determined whether insanity as a whole, inclusive of idiocy, is, or is not, on the increase in this little country of Scotland, where the machinery for obtaining reliable information is, we consider, more complete than it is anywhere else. Thus, in the report of the Scottish General Board of Lunacy, for last year, we find it stated that the results of their inquiries "indicate a progressive increase in the number of lunatics brought under the cognisance of the board; but they do not show whether this increase is due to a greater prevalence of lunacy among the people, or simply to a growing disposition to place the insane in establishments," and "do not justify the conclusion that the increase is due to a more frequent occurrence of mental disease in the community."

The chapter on causes is a very complete and interesting one. Quoting from Dr J. L. Down, it is stated, as a result of inquiry into 2000 cases on the influence of heredity, that "if the neurosis were marked on the mother's side the first children were the most affected; if on the father's side, he found that it was the later born children who were affected." He very properly controverts the opinion expressed by Toussenet and others, that drunkenness in the parents, and especially the father, during the act of procreation, is often the cause of idiocy in the offspring. It is rather surprising to find that Dr Down should have favoured this view, which would be so difficult to establish, supposing it were true, seeing that so many other causes, physical and moral, might be in operation, one or all of which might be more powerful factors than the alleged one. But it is improbable in itself that an ephemeral condition, such as a drinking bout of a few hours' duration, should alter the organic constitution of the elements which combine in the formation of the germ. If such a cause were sufficient, we fear that idiots would be much more numerous than they are. It seems, however, to have been overlooked by those who pin their faith to this theory, that the state of drunkenness, at all

events if decided, is a protection through the *inability* it induces. This fact did not escape the observation of Shakespeare. Thus, in *Macbeth*, we find the porter saying to Macduff in reference to this effect of drink, "It provokes the desire, but it takes away the performance."

We would not, however, wish it to be supposed that in our opinion the excessive use of alcohol may not be the cause of idiocy in the offspring. On the contrary, we think it not improbable that occasionally it may be a result of drunken habits of long standing, when once these have produced morbid changes in the nervous system of the parent. At the same time it is certain that even in these circumstances it is rather a rare event, the children of drunkards being more disposed to ordinary insanity, dipsomania, and other diseases of the nervous system.

A short section is given to a question which has not sufficiently attracted attention in the discussion of the "woman movement," namely, the probable influence on the race through women adopting callings for which they are not fitted by nature.

"We overburden women," says Dr Seguin of New York; "they overburden themselves, and choose or accept burdens unfit for them." "As soon," he says, in another place, "as women assumed the anxieties pertaining to both sexes, they gave birth to children, whose like had hardly been met with thirty years ago—insane before their brains could have been deranged by their own exertions—insane, likely, by a reflex action of the nervous exhaustion of their mothers." Quoting also from Dr Seguin's book, Dr Ireland submits what seems a striking illustration of the evil influence of anxiety and mental shock during gestation; "I have attended," says Dr Seguin, "a mother of a remarkably fine family of four children, whose fifth was affected in this wise. During that pregnancy her husband was deeply involved in speculations; he would say nothing then about his chances, but she knew daily by the way he ate how much he had lost. One day she saw him swallowing his dinner without masticating at all. She fainted away; the child hardly moved after, and was born a cripple and an idiot."

We come now to a part of the work with which Dr Ireland's name is particularly associated, namely, the classification of idiocy. His system was confessedly suggested by the one proposed by the late Dr Skae, for all the forms of insanity. The latter—which, by the way, is largely based on Morel's—is open to many and weighty objections, and will, we doubt, never come into general use. Some of these objections are also applicable to Dr Ireland's classification, but upon the whole they have less force here. We cannot, however, in this review, enter into a consideration of its merits and demerits, and will simply enumerate the classes under which he groups the various forms of idiocy. In order to convey a clearer idea

of the principle which underlies the system, we shall first quote the remarks of the author in introducing it to the reader.

Coming to the study of idiocy after having gained some experience in medicine, I have from the beginning viewed it from the stand-point of pathology; and my idea of idiocy is compounded of the following classes, which are generalised from individual existing idiots, who resemble one another by having the same or similar diseases, as they resemble the type of idiocy by having mental deficiency along with a corporeal disease.

1. Genetous Idiocy.
2. Microcephalic Idiocy.
3. Eclampsic Idiocy.
4. Epileptic Idiocy.
5. Hydrocephalic Idiocy.
6. Paralytic Idiocy.
7. Cretinism.
8. Traumatic Idiocy.
9. Inflammatory Idiocy.
10. Idiocy by Deprivation.

With respect to the forms themselves, while the descriptions of all are good, the chapters on microcephalic and epileptic idiocy, and the one on cretinism, are particularly full and valuable. Regarding the first of these, the microcephalic, the question, which has been much debated, whether it may be properly considered as in most cases due to premature closure of the cranial sutures, is carefully considered. Dr Ireland is decidedly opposed to this explanation, and the fact to which he makes special reference, that very many cases of this form of idiocy have been met with in which the sutures were open, shows that, at all events, it cannot be regarded as a general cause. And even when children, who prove to be idiots, are born with closed sutures, we may also concede that it is more likely that the sutures have closed because, through some morbid condition of the encephalon, the brain has ceased growing, than that the cessation of growth was due to their premature closure. At the same time there seems nothing inherently improbable in this being an occasional, though it may be rare cause of idiocy.

Nearly twenty years ago Dr W. A. F. Browne, as a result of special inquiries respecting certain alleged cases of development from idiocy into full mental power, was led to the conclusion that where the mental defect was associated with epilepsy the hope of ultimately reaching this happy issue was greater than where it was due to other causes. Unfortunately further experience has not borne out this expectation. The observation of a large number of cases in various institutions shows that epileptics are, as a rule, the least improvable of all classes of idiocy, the occurrence of the fits being often associated with mental retrogression. At the same time a certain amount of

support is given to Dr Browne's views by the fact that in a few cases where epilepsy was cured, or recovered from, great mental development was effected. Unfortunately such cases have hitherto been quite exceptional; but it is to be hoped, seeing that the mental deficiency is apparently dependent on the epilepsy, and that this disease is now more amenable to remedial measures than it was formerly, they may be less rare in future.

There follows an excellent chapter on the sensory and mental deficiencies of idiots. The author corrects an error into which many have fallen, in supposing that the instinctive powers of idiots are generally perfect, or even more fully developed, owing to the non-development of the higher mental faculties. We shall leave him to speak for himself on this point :

The following passage from Carpenter's *Physiology* is no more than the statement of a notion very widely diffused, "Those unfortunate beings, in whom the cerebrum is but little developed, are guided almost solely by instinctive tendencies, which frequently manifest themselves with a degree of strength that would not have been supposed to exist; and occasionally new instincts present themselves, of which the human being is ordinarily regarded as destitute." As an instance of this he gives: "A perfectly idiotic girl, in Paris, having been seduced by some miscreant, was delivered of a child without assistance; and it was found that she had gnawed the umbilical cord in two, in the same manner as is practised by the lower animals. It is scarcely to be supposed that she had any idea of the object of this separation." I am not aware of any facts which confirm this statement. My impression is, that instinct is often weaker in idiots than in ordinary children. The action of sucking, for example, is generally regarded as instinctive; but it frequently happens that born idiots cannot suck at all, or require to be fed artificially for some time ere they learn to suck.

As for the story of the idiotic girl in Paris, I know not on what ultimate authority it rests. I have witnessed the birth of a child from an idiotic woman in a lunatic asylum, and can testify that she showed no desire to gnaw the umbilical cord. She seemed quite unconscious of anything but the pain of parturition. The labour pains being feeble, she had in the end to be delivered by the forceps. Her breasts were not much enlarged, and the maternal feelings seemed to be very slightly, if at all, excited. The infant did not appear to me to be an idiot.

A valuable chapter is devoted to the methods of educating idiots and imbeciles. It contains many important practical hints and directions, the fruits of the author's own experience, and will be very useful to those who are engaged in the training of these unfortunates. We have thus adverted to a few of the many interesting and valuable contents of this book. As a whole, it is a work of great merit, and will probably be generally accepted as a standard authority on all that relates to idiocy.

V.—THE HUNTERIAN ORATION FOR 1877. *By* SIR JAMES PAGET. London : Longmans, Green, & Co. 1877.

THIS is the annual oration delivered at the Royal College of Surgeons in honour of John Hunter. Evidently as a labour of love the writer goes into his subject with zest and with his whole heart. He shows us that perseverance and hard continuous work made John Hunter what he was. "It is told of him by one pupil that 'he rose regularly at the dawn of day, and never ceased from his labours till the night was far advanced;' by others, that he allowed himself only four hours for sleep; by another, that when he gave him a letter of introduction, he was asked to call at five the next morning, and found him already at work in his museum." The life of such a man cannot be estimated by days or years. The oration is worthy of the orator, as it is of the famous Surgeon, in memory of whom it was composed and delivered. Here is the character given him by Sir James: "Never before or since—I think I am safe in saying this—never before or since has any man been at one time a thorough student and investigator in so wide a field of science. He was an enthusiastic naturalist; as a comparative anatomist and physiologist he was quite unrivalled; among the pathologists he was by far the first; among the few geologists and students of vegetable physiology he was one, if not chief; and he was a great practical surgeon, surgeon to a large hospital, and holding for some years the largest practice in this town." Surely no one ever knew better than John Hunter that "Time is the warp of Life." He did not confine himself to one subject—he was no specialist—but seemed equally at home in everything he undertook, and "touched nothing that he did not adorn."

A great painter was once asked by a friend how long it had taken him to paint a very fine, small picture which hung in his room. He at once answered, "All my life." This was literally and philosophically correct. The same holds good with regard to the oration before us. Sir James Paget has been all his life engaged, unconsciously, in its preparation. When an experienced surgeon is required to pronounce an opinion in a case which may be to others doubtful, he brings at once to bear on the case before him all the knowledge he has acquired by reading—all the skill he has gained from observation of similar cases, and all the experience which cases dissimilar in their nature have afforded—to aid him in forming his diagnosis, so that he has been all his life in forming the opinion which he gives perhaps off-hand.

The notes appended to this small volume are at once full, varied, instructive and interesting. "One cannot doubt that Hunter was a very good-hearted man, but whether from want of time or want of care, he did not make friends. He was uncouth, vehement, unready to conform to the customs of his profession, and in this sense at least, unsociable, and therefore unpopular." He was too much in earnest about his own work, and had neither time nor inclination to join in what, doubtless, he considered the frivolities around him. Yet "after having studied Hunter's life, and all his defects of temper and of general culture, of social skill and of all the arts of pleasing, nothing has seemed clearer than that the power of a great intellect, with a strong will and a right aim, is in the competition of life, sufficient and irresistible."

VI.—1. ON THE PATHOLOGY AND TREATMENT OF GONORRHEA. *By J. L. MILTON, Surgeon to St John's Hospital for Diseases of the Skin.* London: Hardwick & Bogue. 1876.

2. THE STUDENTS' MANUAL OF VENEREAL DISEASES. *By BERKELEY HILL and ARTHUR COOPER.* London: Smith, Elder & Co. 1877.

SOME years have elapsed since the issue from the American press of a valuable work on Venereal Diseases, which not only has had a wide circulation in this country and been accepted as the standard, but appears to have formed the basis to a large extent of many of the books and articles which have been written on the same subject, and published in England.

The book now before us, of which the Surgeon of St John's Hospital is the author, although it contains much that can be readily found elsewhere, is a vast improvement upon that section of Bumstead which is devoted to the pathology and treatment of gonorrhœa. As it has already received for its earlier editions a favourable and extended notice in our *Journal*, we may do nothing more for the fourth edition than bid it welcome.

To those, however, of our readers to whom the book may be new, it may be well to mention that it contains about three hundred pages of well printed and easily read matter. These are not, however, intended so much for the student as for the busy practitioner, who will find in them much information of a purely practical kind. We would warn the practitioner, for whose benefit the book has been produced,

to carefully avoid, if he is busy, the first sixty or seventy pages. They are not really worth much, and they can be passed over, unless, indeed, he is thoroughly idle, and can bear to wade through the chapters on the genesis of gonorrhoea in both sexes, and be prepared to learn that the disease has been successfully treated with purgatives and diuretics, corroboratives, astringents and laxatives, demulcents and alexipharmics, acids and alkalies, &c., from the days of Sydenham in the 17th century, with his Opo-Balsamum or Balm of Gilead, to those of Henderson in the 19th with his Sandal Oil and Gurgina Balsam, the use of which drugs, by the way, was first brought before the notice of the profession in the pages of our *Journal* about twelve years ago.

The chapter which the author devotes to the consideration of the questions, Does stricture of the urethra arise in consequence of the use of injections, and how far do they influence the origin of an orchitis? is worthy of perusal, and presents a fair sample of his pleasing style of writing. With his views on these questions we entirely agree; at the same time there can be very little doubt that injections badly administered frequently do set up an orchitis, and such an amount of mischief in the urethra as ultimately leads to permanent narrowing of the canal.

Of Mr Hill's little book we can speak with commendation. It will be found a valuable aid to the student whose time for study is limited, and who wishes to obtain a little information on venereal diseases before presenting himself for examination at a Licensing Board. It is only a guide to the student, and for practical purposes may be found of some little value. We would, however, prefer commending to the student the larger volume, of which the one before us is merely a brief summary.

Exchange Journals.

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By DR JOSEPH COATS, *Lecturer on Pathology, Western Infirmary.*

VIRCHOW'S ARCHIV.

VOL. LXVIII., PART III. November, 1876.

CONTENTS.—XIV. A new case of a congenital abnormally wide foramen parietale, by Wenzel Gruber (Plate VI.). XV. Experimental investigations on chronic pneumonia and pulmonary consumption, by Dr C. Friedländer, Strassburg (Plate VII.). XVI. The venous system of the kidneys, by Dr J. von Lenhossék, Bud-a-Pesth (Plate VIII.) XVII. The head-gear of the Homeric heroes, by H. Frölich, Dresden. XVIII. Smaller communications on subjects in physiological chemistry, by Prof. E. Salkowski, Berlin. XIX. Contributions on pancreatic digestion, by Dr G. Weiss. XX. The excretion of kreatin in diabetes mellitus and insipidus, by Prof. H. Senator, Berlin. XXI. The connection between diseases of the ear and those of the fifth nerve, by Prof. Moos, Heidelberg. XXII. Smaller communications. 1. Cases of tumour of the hypophysis, by Dr C. Eisenlohr, Hamburg.

XV. Chronic Pneumonia and Consumption (*Friedländer*).—This is a very interesting paper, but it is almost entirely taken up with technical details. He produces a chronic pneumonia in rabbits by cutting the recurrent nerve or by dividing the vagus. In both cases the pneumonia is due to the passage of food or other foreign material into the lungs from the inability to close the glottis. The pneumonia in these cases is of two sorts—the desquamative and that characterised by the production of small cells instead of the large epithelioid cells of desquamative pneumonia. It is remarkable that it is the small celled form which gives rise to caseation. In man it is well known since the researches of Buhl that the chronic desquamative pneumonia is that which lies at the basis of most cases of phthisis, and this form goes regularly on to caseous degeneration.

XVII. The Head-gear of the Homeric Warriors. (*Frölich*).—It may be interesting to know that the helmet of the Homeric heroes took its origin in a simple cap, first made of dog's skin. It afterwards acquired its character of

helmet by the addition of various equipments for protection. There is no essential difference in construction between the helmet of these days and that at present in use in the German army. There does not seem to have been any crest to the Homeric helmet. It is probable that the metallic equipment of the helmet was movable, and that it was used devoid of this equipment as a light cap when the soldier was out of service.

XXI. Disease of the Ear and of the Fifth Nerve (*Moos*).—This is merely a paper descriptive of the kind of cases in which a combination of diseases of the organ of hearing and of the fifth nerve are met with. These are divisible into two groups, in the first of which the disease is of cerebral origin, the acoustic nerve and the trigeminus being together involved in that part of the medulla oblongata in which originate the deep root of the acusticus and the sensory fibres of the trigeminus. These cases are characterised by the fact, that along with the affection of hearing there is some affection of the sensory part of the trigeminus, its motor portion being unaffected. In the second group of cases there is organic disease of the organ of hearing, generally in the form of acute or chronic inflammation of the middle ear and neighbouring parts. In this class of cases the affection is nearly always on one side, whereas in the first it is mostly bilateral. The affection of hearing will, in this second class, be usually the primary condition, and the fifth will be involved if the disease spread so far as to attack that nerve. The paper concludes with a number of cases in illustration.

XXII. A Tumour of the Pituitary Gland (*Eisenlohr*). The structure of this tumour was that of the normal pituitary body, it comprised a hypertrophy of it with internal hæmorrhage. It appears to have grown slowly at first, and afterwards to have enlarged rapidly from the internal hæmorrhage. While small it produced no symptoms so far as appeared, and when it became large it did so suddenly, and the symptoms were not due to local pressure in the neighbourhood of the sella turcica but to a general disorder of the cerebral circulation.

PART IV. DECEMBER, 1876.

CONTENTS.—XXIII. On the lymphatic spaces of connective tissue, by Prof. J. Arnold, Heidelberg (Plates IX., X.)

XXIV. On the mechanical mode of formation of a large diverticulum of the large intestine, by Dr P. Grawitz, Berlin (Plate XI., Fig. 1, 2). XXV. Experimental investigations, by Dr L. Letzerich (Plate XII., Figs. 1-10 and 1-9). XXVI. A simple colloid goitre with metastasis, by Prof. J. Cohnheim (Plate XII., Fig. 10). XXVII. A pigmented rhabdomyoma, by N. Kolessnikow, St Petersburg (Plate XIII.). XXVIII. Membrane-covered cells and myxoma, by Prof. J. Kollmann, Munich (Plate XIV.). XXIX. The formation of pus cells and the alterations of the membrana propria in inflammation of the mucous membrane of the air passages, by Dr N. Socoloff, St Petersburg (Plate XV.). XXX. Smaller communications. 1. Reply to the paper by Dr Politzer on the innervation of the tensor tympani, by Prof. R. Voltolini, Breslau. 2. Variety in the valves of the right auricle, by Dr C. Lauenstein, Hamburg (Plate XI., Fig. 3). 3. Reply to Dr Schiefferdecker, by Prof. B. Naunyn, Königsberg.

XXIII. The Serous Spaces and Canals of Connective Tissue (*Arnold*).—This author has published numerous observations concerning the connection between the blood-vessels and the parenchymatous spaces which lie between the blood-vessels and the lymphatics proper. These observations were made by injecting various pigments into the blood-vessels. The pigment may be made to leave the vessels and pass into these spaces and channels especially in inflamed or oedematous parts. (See this Journal 1874, p. 133; 1875, p. 390; and 1876, p. 409.) These experiments were made by injection, but in the present set he infuses materials into the blood of the living animal, and allows them to be carried to the spaces by the natural forces. He thus infused the indigo-sulphate of soda, and he could observe the colouration in the tissues of the animal (the frog) during life. He also used the ferrocyanide of potassium, and irrigated the parts with a solution of perchloride of iron so as to form Prussian blue. In a third set of experiments he used a solution of starch, which he afterwards made manifest by applying solution of iodine. In a fourth set Indian ink was used, the fine granules passing readily from the vessels. By all these methods he was able to demonstrate the existence of spaces in the connective tissues similar to those already found by him, and these spaces are in direct connection with the blood vessels. It may give an idea of the paper if we follow the author in his comparison of his results with those of Recklinghausen. The latter, by a totally different method, first made the im-

portant observation that there are spaces in the connective tissues, which may be looked on as the roots of the lymphatic vessels. The present author has proved that these spaces are not only connected with the lymphatics but also with the blood vessels, forming, in fact, a system lying between these two sets of vessels. Recklinghausen believed these spaces to be channelled in the substance of the connective tissue, while Arnold asserts that they take their shape from the elements of the connective tissue itself. Connective tissue is usually made up of fine fibrillæ joined together in bundles, and the spaces between the bundles are the serous spaces under consideration. There are also spaces between the fibrillæ which are found to contain colouring matter when a large excess has been present. Again, Recklinghausen believed that the connective tissue cells were spindle-shaped bodies lying in the serous spaces. Arnold says they are flat bodies which are applied by one of their surfaces to the bundles of fibrillæ and are exposed by their other surface to the space. When the space is distended the cell remains adherent to the bundle.

XXV. The Contagium of Typhoid Fever (*Letzerich*).

—After giving some further observations on his old subject, the diphtheria fungus, this indefatigable writer communicates the results of his observations in typhoid fever. He has been able to produce this disease in rabbits by administering or injecting the poison derived from the stools. Whether given by the mouth or by subcutaneous injection it produced the same changes in the intestinal canal, mesenteric glands, and other internal organs as we see in man. But if injected subcutaneously it first produced an enlargement of the corresponding lymphatic glands, this enlargement consisting of a great production of cells, and being due to the existence and growth of an organism which is here figured as it occurs in various situations.

XXVI. Colloid Goitre with Metastasis (*Cohnheim*).

—This is a very interesting paper in relation to the pathology of tumours. It is well known that ordinary goitre is one of the simplest of growths, but here is a case in which, with a comparatively small primary goitre, there were tumours having exactly the same structure as the altered thyroid gland, in the lungs, lymphatic glands, and various parts of the skeleton. As these tumours had a gelatinous appearance they were at first taken for colloid cancer, and a careful

search was made for a primary tumour. None was found, and the microscopic characters at once showed the follicles with colloid contents of goitre. It thus appears that the simplest of tumours may take on a malignant action like the most malignant of sarcomas or cancers. Instances have already been recorded where chondromas and myxomas and even lipomas have conducted themselves in this way, and the present case adds another form of tumour to the list.

XXVII. Pigmented Tumour of Striated Muscle (*Kolessnikow*).—After a sketch of cases hitherto recorded of tumours composed of striated muscular fibre, the author gives his case, which occurred in a horse. There were several melanotic tumours round the anus and on the under surface of the tail. Secondary tumours had developed in the lung and on its surface, as well as in the liver and peritoneum. The tumours consisted mainly of pigmented spindle-shaped cells with transverse striæ.

XXIX. The origin of Pus Cells in Mucous Membranes (*Socoloff*).—This is an important contribution to the question of the origin of pus cells, and as the investigation was done under the direction of Virchow we may, perhaps, regard it as in part bearing his authority. It is well known that in all sorts of expectorations there are abundant round cells, which may be called pus cells or mucous cells. Different views are held as to the origin of these cells, some regarding them as emigrated blood corpuscles, some as produced by the ciliated epithelium, and some as derived from the connective tissue of the mucosa. It is difficult to decide this point in the human subject, as the epithelium is generally macerated from the surface of inflamed mucous membranes before they can be subjected to examination. The author, therefore, resorted to experiment to decide the question, and he produced inflammation in the air-passages of dogs by introducing bichromate of potash in powder, or a watery solution of chromic acid, through a wound in the trachea. Before giving the results of these experiments we may remind our readers of some points in the structure of the parts concerned. On the surface of the mucous membrane of the air passages there is a layer of ciliated epithelium. Beneath and between these cells there are round or irregularly-formed cells, which appear to replace the epithelium when it is shed, and which, therefore, belong to the epithelial system, and may be said to constitute the sub-epithelial layer, although scarcely form-

ing a continuous layer under the ciliated cells. The epithelial cells comprising these two sorts rest on a basement membrane which appears to be hyaline and structureless, but is believed by some to be cellular in structure. The mucous membrane proper, or mucosa, is under the basement membrane, but of its structure we need say nothing, except that it is supplied with blood-vessels while the three layers above it are not. Now, when the surface of the mucous membrane is irritated in the way described pus corpuscles are produced and form a thin layer on the surface. If the irritation is slight, then all the changes are confined to the superficial layers above described, there is no trace of alteration in the mucosa either near the vessels or elsewhere, and the pus is obviously not derived from the blood vessels or the connective tissue. But the epithelium and basement membrane are altered. Instead of the epithelial and sub-epithelial layer there is a pretty thick layer of round cells, and beneath this a layer of spindle-shaped cells, which is thicker according to the degree of the inflammation. The round cells are derived from the sub-epithelial layer, the formed ciliated epithelium taking no active part but being soon shed. Sometimes there are pus cells inside these epithelial cells, but they have penetrated into them and are not formed in them. It looks as if, when the cells have so far differentiated as to have the distinct structure of fully-formed epithelium, they are no longer active, and cannot take part in inflammatory processes. The layer of spindle-shaped cells is, no doubt, the altered membrana propria, and the fact that this membrane takes part in the process indicates that it belongs to the epithelial system, and may be further regarded as proving that it is not a structureless membrane but composed of cells. Sometimes the layer of round cells on the surface gets worn down, so that the spindle-cell layer is exposed as if by superficial ulceration. After such a process the regeneration of epithelium, if it occurs, will be from the altered membrana propria. The author further suggests that the pulmonary epithelium is probably a continuation of the membrana propria, and it will be quite consistent with this that the former reacts to inflammation and produces round cells. The author has made some observations on this subject, but as they are not quite complete he holds them at present in reserve. It may be added that the mucous glands present similar changes to the superficial epithelium. Their epithelium produces round cells which fill the gland, and the membrana propria forms a layer of spindle-shaped cells.

VOL. LXIX. PART I. JANUARY 1877.

CONTENTS.—I. On the diagnostic value of conjugate deviation of the eyes and abnormal positions of the head and body in diseases of the brain, by Dr M. Bernhardt, Berlin. II. On the healing of wounds of the cornea, by Dr H. von Wyss, Zurich (Plate I.). III. On cylindroma, by R. von Ewetsky, Zurich (Plates II. and III.). IV. Investigations on the accumulation of white blood corpuscles in the cortex of the brain, by Duke Charles of Bavaria, M.D. (Plates IV. and V.). V. Anatomical investigations on tuberculosis of the testicle (phthisis testis), by Dr J. Gaule, Heidelberg (Plate VI.). VI. Unusual consequence of an injury to the head, by Professor H. Friedberg, Breslau. VII. On tumours of the iris, by Professor H. Schiess-Gemu-sens (with a woodcut). VIII. On hydræmia and hydræmic œdema, by J. Cohnheim and L. Lichtheim, Breslau. IX. Smaller communications. 1. The abortive treatment of syphilis, by Dr E. Weisflog, Zurich. 2. On methods of laryngoscopy, by Dr J. Hirschberg, Berlin (with a woodcut). 3. To our contributors.

I. Diagnostic Value of Deviation of Eyes, Head, and Body (*Bernhardt*).—Prevost held the view that the deviation of the eyes and head to one side which is so often seen immediately after an apoplectic attack, may be used as a means of diagnosing the seat of the lesion in the brain. He stated that where the lesion has its seat in the cerebrum the deviation is constantly towards the side of the injury of the brain. But when the lesion is in the pons, corpora quadrigemina, or cerebellum, then the deviation may be to the sound side. The present author has come to the conclusion that these statements are subject to so many exceptions that no diagnostic value can be attached to this symptom. Although his results are negative, they are not therefore devoid of value.

II. Healing of Wounds in the Cornea (*Wyss*).—In the healing of superficial wounds of the cornea, the author ascribes great importance to the epithelium, and he states that for the first few days the proper tissue of the cornea takes no part.

IV. The Convolutions of the Brain in Fever, &c. (*Prince Charles*).—We must remark it as peculiarly significant of the position of science in Germany, that we have a paper of this kind from a royal prince of the house of Bavaria. The

paper describes and figures the condition of the convolutions of the brain in certain diseases as regards the quantity of white blood corpuscles or leucocytes to be found there. These bodies are to be found in considerable numbers in all brains, but they are increased where the circulation is retarded and the quantity of serous fluid is increased, as in fevers. It is asserted that the brain symptoms in fevers depend on the co-operation of various factors, namely, the leucocytes, the slow circulation and accumulation of serous fluid, and the special agent concerned in the production of fever. The white blood corpuscles have their seat in the perivascular spaces of His, in the adventitial canals of Robin, and in the periganglionic spaces. They do not penetrate into the substance of the ganglion cells.

VIII. The Pathology of Œdema (*Cohnheim and Lichtheim*).—The cause of the œdema in Bright's disease and in some other conditions has given rise to much discussion. Bright believed it to depend on a watery state of the blood due to the loss of albumen through the kidneys. It soon became clear, however, that this explanation would not suffice. The œdema in no way accurately corresponds with the amount of albumen lost, as we see in acute scarlatinal dropsy. On the other hand, there is often great loss of albumen by suppuration with no œdema or very little. Here came in the theory of "hydræmic plethora" to account for the œdema. With the loss of albumen there is often a diminution in the quantity of urine. The water being retained, the blood is relatively increased in bulk, and at the same time unduly watery, while the loss of albumen renders it still more dilute; so that there is hydræmia with plethora. Majendie seemed to have nearly established this theory when he found that by injecting water into the veins he produced œdema. But this experiment is not a pure one, because water dissolves the blood corpuscles and thus alters the constitution of the blood. The present authors started from Majendie's experiments, but in order to avoid the destruction of the blood corpuscles, they injected large quantities of a solution of chloride of sodium (0.6 per cent.) instead of water. By this means they produced a hydræmic plethora, the solid constituents in a given bulk of blood being much reduced, while the entire bulk of blood was much increased. This hydræmic plethora did not produce any increase of the arterial tension, and in this respect the results agree with those of Worm Müller, who found that simple plethora produced by the injection of defibrinated blood did not increase the arterial tension. This is opposed to Traube's view of increased arterial tension. The

injection produced an elevation of the venous tension, but this was nearly always temporary, or, if permanent, very small in amount. There was great increase in the rapidity of the blood current, as determined by microscopic examination of the tongue, web and mesentery of the frog, and the mesentery of the rabbit and dog. The secretion from the salivary glands, stomach, intestines, liver, lachrymal glands, and kidneys was greatly increased, and there was also a great increase of the flow of lymph in the thoracic duct. While there was this increased quantity of lymph in the duct fed by the viscera, there seemed to be no excess in the amount of lymphatic fluid from the skin and muscles of the limbs. The distribution of the oedema corresponded with this: there was no oedema of the skin, but there was great ascites and oedema of the following parts, the mucosa and submucosa of the intestines, the lymphatic glands of the mesentery, the pancreas, the kidneys, the gall bladder. It is clear that these observations do not throw any direct light on the oedema of Bright's disease, as the oedema was absent from the parts affected in Bright's disease—namely, the skin, and present where it does not exist in that disease. It would seem, therefore, improbable that the oedema of Bright's disease is to be accounted for by simple hydræmic plethora. The observations may, however, throw some light indirectly on the oedema of Bright's disease, and in this regard merit closer study. The oedema in the organs in which it was found is not due to increased arterial pressure, because that was not present, but it may be accounted for by a distension of the vessels beyond their elastic resistance. It is to be noted that all the organs where oedema existed are normally concerned in removing water from the blood. The water in the blood being increased, there is naturally an increased transudation. We may suppose that the vessels of these parts have a special structure related to this function of theirs, and that they allow of the transudation of water more readily than the vessels of other parts. It will be observed thus that three conditions are concerned in the production of oedema, hydræmia or wateriness, plethora or increased bulk, and a special condition of the vessels, which in these parts is related to the function of the organs. Now, in Bright's disease the probability is that there is an alteration of the vessels of the skin. It does not seem probable that the normal vessels of the human skin are materially different from those of dogs and rabbits, although the fact that man sweats more than these animals might suggest such an explanation. The vessels seem to have undergone a pathological change in Bright's disease.

In illustration of this, it is to be observed that in the experiments of our authors, œdema did occur in the skin if the vessels had sustained injury. Thus, in a dog whose muzzle had been injured by tying it up, there was great œdema of the skin around the mouth. Then if the skin were pencilled with iodine or exposed to the heat of the sun, œdema occurred. In Bright's disease the nature of the alteration of the vessels of the skin is not known, but certain facts seem to point to a certain correlation of the kidneys and the skin as to pathological processes. Thus in scarlatina the rash and desquamation show that the vessels are specially affected. Then there is the well-known relation of the function of the skin to the secretion of urine. And lastly, we have the nephritis occasionally set up by burns, and experimentally in animals by varnishing them. In the œdema of cachectic patients, we may suppose that the prolonged hydræmia may have injured the vessels.

PART 2. FEBRUARY 1877.

CONTENTS.—X. Ludwig's Stromuhr's and Hueter's theory of fever, by Dr A. W. C. Berns, Freiburg. XI. On the local cutaneous temperatures in febrile diseases, by Dr H. Wegscheider. XII. The contractions and innervation of the spleen, by Dr J. Bulgak, Moscow. XIII. Anatomical investigations on tuberculosis of the testis (phthisis testis), by Dr J. Gaule, Heidelberg, concluded from Part I. (Plate VI.). XIV. Sarcoma of the lymphatic glands, by Dr R. Putiata, Moscow (Plate VII.). XV. Neuritis acuta progressiva, by Dr H. Eichhorst, Jena (Plates VIII. and IX.). XVI. The adenoma and granuloma of the umbilicus in children, by Dr O. Küstner, Halle (Plate X.). XVII. On certain changes which the red blood corpuscles undergo in extravasations, by Professor A. Boettcher, Dorpat (Plate XI., Fig. 1-4). XVIII. Smaller communications. 1. On necrosis of the papillæ of the kidneys in hydronephrosis, by Dr N. Friedreich, Heidelberg. 2. On pathological changes in the labyrinth of the ear in secondary syphilis, and the consequent disturbances of hearing, by Dr Moos, Heidelberg. 3. Answer to Dr Naunyn, by Dr P. Schiefferdecker, Rostock. 4. Medico-scientific obituary for 1876, by Dr W. Stricker. 5. On the significance of the blood, by Dr H. Kornfeld, Wohlauf.

XI. Local Temperatures in Fever (*Wegscheider*).—This paper is divisible into two parts, in one of which the con-

dition of the cutaneous temperature in different parts of the body during fevers is discussed, and in the other the temperature in the axilla in unilateral affections of the thoracic organs. In the first part experiments are detailed which were made mostly on patients with, or convalescent from, typhoid fever, but also in some other febrile diseases. Thermometers were placed simultaneously in the axilla and between the first and second toes of both feet, being kept in the latter position by straps of plaster. The patients lay in bed during observation, and the thermometers were left usually for three-quarters of an hour, readings being taken every five minutes after the first ten or fifteen minutes. On a review of his observations, he comes to the following results:—Taking the axillary temperature as an index of the internal temperature of the body, the external temperatures in different parts of the body do not, in febrile diseases, go parallel to this. The latter may fall while the former is rising, and vice versa. Similar divergences may occur between symmetrical parts of the body, as the spaces between the toes of the right and left feet. There may be not only a difference in the rate of rise and fall during the same period, but the one may be rising while the other is falling. During the febrile state there are much greater variations in the temperature of the same part of the skin than in the non-febrile state of the same person. The cutaneous temperatures in fevers are often much lower than those in the non-febrile state, and in fact he has only found such low temperatures in persons who suffer from cold feet. These facts seem to indicate that during fever the cutaneous vessels are in an abnormal state of excitement, and that they are much disposed to produce local variations in the supply of blood and rapidity of the circulation. As to the second part of the paper, he finds that the results are not by any means so positive as some French writers have asserted. The differences between the temperatures in the two axillæ in cases of unilateral pleurisy are very slight, and hardly exceed normal limits. The temperature is not uniformly higher on the side of the exudation than on the sound side, although it was more frequently so. In one case of bilateral pleurisy, the temperature was lower on the side where the exudation was greatest.

XII. Contraction and Innervation of the Spleen (*Bulgak*).—It is well known that the spleen contains abundant muscular fibre, and that it is capable of contracting, the contraction producing wrinkling or a granulated condition of the surface. In death from asphyxia, Sabinsky always found the

spleen anæmic from active contraction, and he ascribed the contraction to the circulation of altered blood in the organ. The altered blood he supposed did not affect the splenic muscle directly, but irritated the nerves of the spleen, the contraction being a reflex phenomenon, although the reflex centre was not determined. The present author has made a large number of experiments with the spleen, and has determined some interesting facts. He finds that the injection of curare does not affect the splenic contractions. Prolonged narcosis weakens them. Quinine produces active contraction of the spleen, and during the contraction the number of white corpuscles sent from the spleen by its vein is doubled. The introduction of ergot in various forms does not cause the spleen to contract, although it produces a general contraction of the intestines and of the uterus and its vessels, with a reduction of the force of the heart. Asphyxia produces contraction, but it occurs near the end of the process, just before death. Irritation of the central end of the divided pneumogastric produces contraction by interfering with respiration; irritation of the peripheral end has no effect. The immediate centre for contraction of the spleen is the left semilunar ganglion, irritation of which produces strong contraction. There are, however, centres in the spinal cord, irritation of which produces contraction of the spleen, and he finds these to be situated at the level of the first to the fourth cervical vertebra. These centres in the cord communicate with the left semilunar ganglion by the left splanchnic major. Irritation of the peripheral end of this nerve when divided produces violent contractions. No effect was produced by irritating the lesser splanchnic on the left side, or either splanchnic of the right side.

XIII. Tuberculosis of the Testicle (*Gaule*).—In this paper the entire pathological process in what is commonly known as tuberculosis of the testicle is carefully traced. In this disease there is a condensation of the tissue of the testis, but not a regular condensation. Nodules are present, and in their centres there is commonly a small quantity of cheesy material, these nodules having thus a strong resemblance to tubercles. These nodules afterwards coalesce, and we have large cheesy masses which may soften and break down into so-called tubercular cavities, so that we may have ulcers and fistulæ. The present author endeavours to show that the process is not properly a tubercular one at all. The disease nearly always begins in the epididymis, and there is here at first a catarrhal inflammation, followed by thickening of the wall of the epi-

dydimis and of the surrounding tissue. This spreads to the rete, and here also we have a catarrh of the tubes and an interstitial inflammation. From this the disease may spread to the body of the testis, still manifesting itself in a catarrhal inflammation in the tubules (spermatophoritis) and an interstitial inflammation around the tubules (perispermaphoritis). The latter process is secondary to the former, and as the tubules are not uniformly affected, the formation of fibrous tissue occurs around the specially affected parts of the tubules as around foci. Hence the appearance of nodules which is so characteristic of the disease in the substance of the testicle. The contents of the tubules, being the products of the catarrhal inflammation, readily become cheesy, and this gives the cheesy centres to the nodules, which still further increases their resemblance to tubercles. But it is not a true tuberculosis, and is rather comparable with the processes in non-tubercular phthisis pulmonum. The author would, therefore, prefer to call the disease phthisis testis. In a postscript, he observes that since his paper was written Melassez has published a paper on the same subject. So far as the histology goes the results are similar, but Melassez regards the fibrous nodules as derived from the endothelium of the walls of the tubules, and as comparable with the tubercles of serous membranes. He, therefore, asserts the tubercular nature of the disease, and we expect that he will find more adherents than our present author.

XV. Acute Progressive Neuritis (*Eichhorst*).—This is a highly interesting case, both from a pathological and clinical point of view. The symptoms seemed to point to an inflammation of the stems of the peripheral nerves, involving one stem after another. The *post-mortem* appearances agree with this, there being no discoverable affection of the brain or cord, but great hyperæmia of the nerve stems, with small hæmorrhages and accumulations of leucocytes. The nerve fibres appeared to be little involved, but those next the perineurium or the hæmorrhages showed ordinary fatty changes. The patient was an old woman, admitted with febrile symptoms like those of ague. These seemed to yield to quinine, but almost simultaneously with the reduction of the temperature a paralysis of the left peroneus longus muscle occurred. There was a feeling of formication and cold in the affected parts, with sweating. Sensation was diminished from the first, and was lost in a few hours. The paralyzed muscles at first replied to electric stimulation, but next day this, too, was lost. About a week after a similar affection of the peroneus brevis of the same side occurred.

and it was also preceded, for a day, by elevation of temperature. In three days more the left tibialis posticus was involved, and in the course of the next ten days the whole of the nerves of the four extremities were progressively attacked, till at the end of that period the whole of the limbs were motionless. Death occurred in a few days, and was preceded by blindness, which supervened forty-eight hours before the fatal issue. Death seemed directly due to interference with respiration. The disease, in some respects, resembles that described by some French authors, as acute ascending paralysis, which is said to be due to an affection of the ganglion cells of the anterior cornua of the cord. It differed from this disease, however, in respect that sensation is not affected in the latter, whereas here it was soon abolished. The electric excitability of the extremities is retained in acute ascending paralysis, while here it was lost after a day. The results of the *post-mortem* examination were also against this diagnosis. The author asserts that the ganglion cells of the anterior cornua were in no way different from the normal. The disease was a generalised neuritis affecting the extremities.

XVI. The Fungating Umbilical Tumours of Children (Küstner).—The author distinguishes two forms of umbilical tumour, in one of which there is gland tissue, and which, therefore, merits the name of adenoma. In the other form there is only granulation tissue, and he calls it, therefore, a granuloma. He has had seven cases of the latter to two of the former.

XVII. Blood-corpuscles in Extravasations (Boettcher).—This paper is an indication of the great care that is necessary in interpreting appearances presented by structures under the microscope. It is asserted that the red blood-corpuscles may undergo changes when extravasated, which have led to very erroneous conclusions. When preserved in the aqueous humour of the eye, the red corpuscles gradually exhibit a nucleus, and the appearances presented have led to the mistaken view, that red corpuscles were being produced from white ones. The nucleus of the corpuscle may also be brought out by preserving in concentrated alcohol, and the nucleus may afterwards be tinted with anilin, &c. Under certain other circumstances the red corpuscles are converted into clear glancing globules, which have been called extravasation corpuscles, and have received wrong interpretations.

PARTS 3 AND 4. MARCH, 1877.

CONTENTS.—XIX. Investigations on putrid infection and infection by micrococci, by Dr A. v. Puky (from Recklinghausen's laboratory at Strassburg). XX. Physiologico-chemical contributions, by Dr I. Munk, Berlin. XXI. On the occurrence of melanæmia, by Prof. Mosler. XXII. Anatomical notes, by Dr W. Gruber, St Petersburg. Nos. I. to X. XXIII. A case of enchondroma osteoides mixtum of the lung, with partial amyloid degeneration, by Dr A. Lesser (Plate XIV.). XXIV. On the seat of the pock in the epidermis, and the first stages of the process, by Dr P. G. Unna, Hamburg (Plate XV.). XXV. Contribution on ichthyosis and the epithelial growth in it, with remarks on the formation of hair, by Dr J. Essoff, St Petersburg, from Recklinghausen's laboratory (Plates XVI., XVII.). XXVI. Contribution on osteomalachia, by Dr O. Langendorff, and J. Mommsen (Plates XVIII. and XIX.). XXVII. Contribution on icterus, with special reference to the urine, by Dr J. Jacobs, Lockem. XXVIII. On concussion of the brain, by Dr L. Witkowski, Strassburg. XXIX. On oedema and the flow of lymph in inflammation, by Dr O. Lassar, Breslau. XXX. Smaller communications. 1. Some observations on hay-fever, by Dr G. F. Patton, from Mississippi. 2. On the action of certain acids injected into the veins, by Dr P. Guttmann, Berlin. 3. Critical remarks on the so-called adenoma (Küstner) of the umbilicus of children, by Dr Kolaczek, Breslau.

XIX. Absorption of Putrid Material (Puky).—These experiments, performed under the direction of Recklinghausen at Strassburg, seem to confirm the view that putrid materials introduced into the body may produce their effects in two different ways. That is to say, there is produced in putrid fluids a poison, which has a virulent action on the animal body, and may even prove fatal; but this poison has no special vitality, it acts like an ordinary poison, is not a *venenum animatum*. But in addition to this, putrid substances produce living organisms, micrococci, and these may, under certain circumstances, propagate themselves in the living body, and produce disastrous results. The circumstances which determine one or other of these modes of infection are difficult to explicate, but there is an attempt made here to determine them for one substance. All the observations were made with yolk of egg, which was exposed in clean vessels to the air, till it became putrid. The putrid material was injected into the

jugular veins or subcutaneously in living animals. It was observed that when the material had been in a putrid state for weeks, it was much more likely to produce an infection by micrococci than when it was putrid only for a few days. In connection with this, it is noticed that when a few days old the material has an acid reaction, but becomes less acid as time goes on, so that acidity seems unfavourable to the propagation of micrococci. In some of the experiments the putrid material was boiled or filtered. It was found that boiling not only precipitates the albumen, but materially interferes with the putrid poison. The longer the fluid is boiled the less virulent is the poison. The results of these observations are directly applicable to human pathology. In man, putrid fluids are doubtless frequently absorbed, and, according to circumstances, we have one or other of these modes of action, the simple putrid infection, or the infection by vibrios or micrococci.

TRANSACTIONS OF The Medico-Chirurgical Society.

SESSION 1877-78.

FIRST MEETING, 7th September, 1877—Dr Watson, President, in the chair.

The following gentlemen were elected office-bearers for the Session :—

President.

Dr EBEN. WATSON.

Vice-Presidents.

Dr G. H. B. MACLEOD.

| Dr ALEX. PATTERSON.

Council.

Dr D. TAYLOR, *Paisley.*

| Dr T. GRAHAM, *Paisley.*

Mr A. MACFARLAN.

| Dr WILLIAM MACGILL.

Dr THOMAS REID.

| Dr HUGH MILLER.

Dr M'CALL ANDERSON.

| Dr ALEX. ROBERTSON.

Secretaries.

Dr JOSEPH COATS.

| Dr G. P. TENNENT.

Treasurer.

Dr HUGH THOMSON.

I. TRAUMATIC ANEURISM OF AXILLARY ARTERY.

The President read a "Case of Traumatic Aneurism of the Axillary Artery Cured by Syme's Operation."

The patient, a man aged 41, was received into the wards of the Royal Infirmary from the prison at Hamilton, where he was undergoing a term of incarceration for housebreaking. He received a bullet wound in the right axilla four weeks before admission; there was copious hæmorrhage at the time, but no appearance of aneurism till two weeks before his removal to Glasgow. When first seen by Dr Watson the pulsation of the tumour was manifest to sight and touch, and the sac was evidently imperfectly formed; there was pain in the course of the ulnar nerve, and paralysis of hand. The operation consisted in laying open the sac and ligaturing the artery at its entrance and exit. The subclavia artery was compressed by means of a key, in the usual manner, an incision was then made over the centre of the tumour, so as to expose it freely, when it was found that the ulnar and median nerves were stretched across the sac at its upper part; these were with difficulty kept out of the way, and the sac was freely laid open. The distal end was easily ligatured, but some difficulty was experienced in securing the artery on the proximal side of the aneurism, and notwithstanding that the subclavian was firmly compressed, a gush of blood took place before the aneurism needle could be got round the vessel.

Dr Watson made some remarks on the case, in which he said that he believed that the side of the artery was cut away by the bullet, but that it was remarkable that so long a time should have elapsed before the formation of the aneurism; the site of it he believed to be between the giving off of the subscapular artery and the origin of the long thoracic branch. Had he to treat a similar case in future, he thought he would adopt the expedient practised by Mr Syme, and cut down on the subclavian artery in the third part of its course, so as to secure it more effectually. The patient was removed to Hamilton twenty-seven days after the operation, and at this time the wound was almost healed; the inside of hand was still devoid of sensation, but the parts supplied by the median nerve had their normal sensibility.

Dr Watson then read notes of a case of *Traumatic Aneurism of the Brachial Artery*, in which he had also adopted Syme's method of treatment with success, after pressure had been tried without good effect.

Dr George Buchanan said that the case had several interesting features, among which was the length of time which appeared to have elapsed from the receiving of the injury to the formation of the aneurism. He had seen many cases in which there was, as in the present instance, a considerable interval of time till the tumour appeared. With regard to the operation, it would be found that in operating on cases of the kind under discussion, a very considerable amount of help could be obtained by putting into one end of the vessel—while manipulating with the other—a curved solid sound, sufficient to fill up the vessel. There was no question but that Syme's operation was the correct procedure in the present instance, and much preferable to acupressure, galvano-puncture, &c. It would, no doubt, in this case, have been a greater comfort to have cut along parallel

to the sterno-mastoid muscle, as Mr Syme did. The operation would have been much easier.

Mr Clark concurred in the view that no other possible method of treatment would have been so successful in the present case. From the history of the case it would appear that there was pressure on the ulnar nerve from the commencement. This would explain the nervous symptoms which had been described. The second case which Dr Watson had adverted to came under his (Mr Clark's) care at first. It had been by his orders that digital compression was employed. There was a very well marked sac; and in these cases of traumatic aneurism, in which the sac was very firm and thick, that method should be tried at first. This method having failed, he would have had recourse to the procedure described in the paper, had not Dr Watson returned to the wards, and taken the case into his own hands.

The President thanked the society for the reception given to his paper.

II. CATARRH OF THE PHARYNX.

Dr Foulis read "On the Treatment of Catarrh of the Pharynx." (See page 521.)

Mr Clark said, that in the historical sketch of the various modes of treatment given by Dr Foulis, it appeared as if he were rising step by step from the milder and simpler modes till he culminated in his own method, which certainly looked severe enough. But he was quite prepared to believe that the measure was very much less heroic than it appeared. Patients of Dr Foulis had assured him that the pain was inconsiderable and the benefit great.

Mr John Reid was inclined to think that for such an affection as chronic pharyngeal catarrh the treatment was extreme in its rigour. His own observation led him to believe that cauterization of any kind was of no benefit, except in cases in which there was circumscribed ulcer. He treated the ordinary cases simply with gentle purgation, which generally gave relief. If local applications seemed to be indicated, a simple borax gargle was the best treatment. To treat such cases with a hot iron would be as inconvenient in practice as it was wrong in theory. He held that the affection was due, generally speaking, to a congested state of the mucous membrane, as induced by cold. This state kept up a chronic inflammatory action.

Dr Patrick spoke as one who had had personal experience of the affection. Gargles, he thought, were not of any great use in it. He had found great advantage from using a strong solution of nitrate of silver, applied with a probang every third or fourth day. He had also found, in very severe cases, the application of glycerine of tannin twice a day very advantageous. If the congestion were far out at the back of the nasal passage, the nasal douche, with chlorate of potash drawn up through the nose and let out by the mouth, was of service. Many of these cases were accompanied by a cough. He would shrink from applying the actual cautery. A little constitutional treatment was also of great value, as the patients were generally down in general health. The inhalation of vapours, such as that of vinegar, coffee, hot water, &c., was often applied with benefit.

Dr Maclaren said that he would in all such cases give constitutional treatment. A chronic catarrh of this kind continuing for months, he always looked upon as a sure sign of some constitutional diathesis. There was generally a strumous tendency in these cases; not seldom a tendency to phthisis. He thought that the one fault of the otherwise admirable

paper of Dr Foulis, was the absence of all reference to a constitutional origin of the affection, and consequently of a constitutional as well as a local treatment.

Dr Cassells said that he had a high sense of the value of the means of treating this affection brought forward by Dr Foulis. Every one who had been in the habit of meeting these cases was aware how intractable they were, resisting sometimes all ordinary forms of treatment. He had formed an opinion that not a few of these cases had a syphilitic origin. At the Brussels congress, held some two years ago, this subject was under discussion, and several expressed an opinion of the constitutional origin of the affection, especially as associated with bad hygienic conditions. He expressed his belief of its not very remote connection with syphilitic taint, as it was often seen in patients who had good hygienic surroundings. Except in its method of application, this treatment of Dr Foulis was not an original operation. Galvano-cauterism had been applied on the Continent with good results in the treatment of adenoid growths. It appeared to him that the application of the actual cautery to the pharynx placed in their hands a means of making the disease curable. Many cases of adenoid growths in children could be treated effectually in this way. It was much preferable to the spoon employed on the Continent.

After some remarks from Dr Fergus, *Dr Renton* said, that no doubt Dr Foulis would see the disease in a more aggravated form than that generally met with in private practice; and that while this method might be adopted to that class of cases, it would not be so suited to the milder forms. In the latter class of cases the great matter was to soothe the continual irritation. After suffering from an attack of diphtheria, he found bromide of ammonium of great service. This was suggested to him by Dr Begbie, of Edinburgh, who instructed him when applying it, to allow a little to go over the fauces. By this means the remoter seat of the affection was bathed with the bromide, with distinctly good effect. He always used this now coincident with constitutional treatment.

Dr Scott Orr said that the affection was very common and very troublesome. As to its origin it was very often associated with a dyspeptic condition. The patient was generally in poor health. In this class of cases the cautery would hardly be a proper application. Constitutional treatment was distinctly indicated. The bromide of potassium, in combination with sarsaparilla, was often of great benefit.

Dr George Buchanan pointed out that there were two classes of cases of chronic pharyngeal catarrh—one a constitutional affection, and the other more local in its origin, and it was only to the latter that Dr Foulis's mode of treatment was applicable. With regard to washes, there was always a great difficulty in getting the solution to reach the whole of the affected surface. They could not well reach the pharynx above the uvula; and it would be found that in chronic pharyngeal disease it was necessary to wash the back part of the roof of the mouth. This they could do by means of the action of the levator palatæ muscle. By holding one nostril, and introducing a tube in connection with a vessel holding the liquid into the other, they were able to bathe the whole of the upper part of the pharynx.

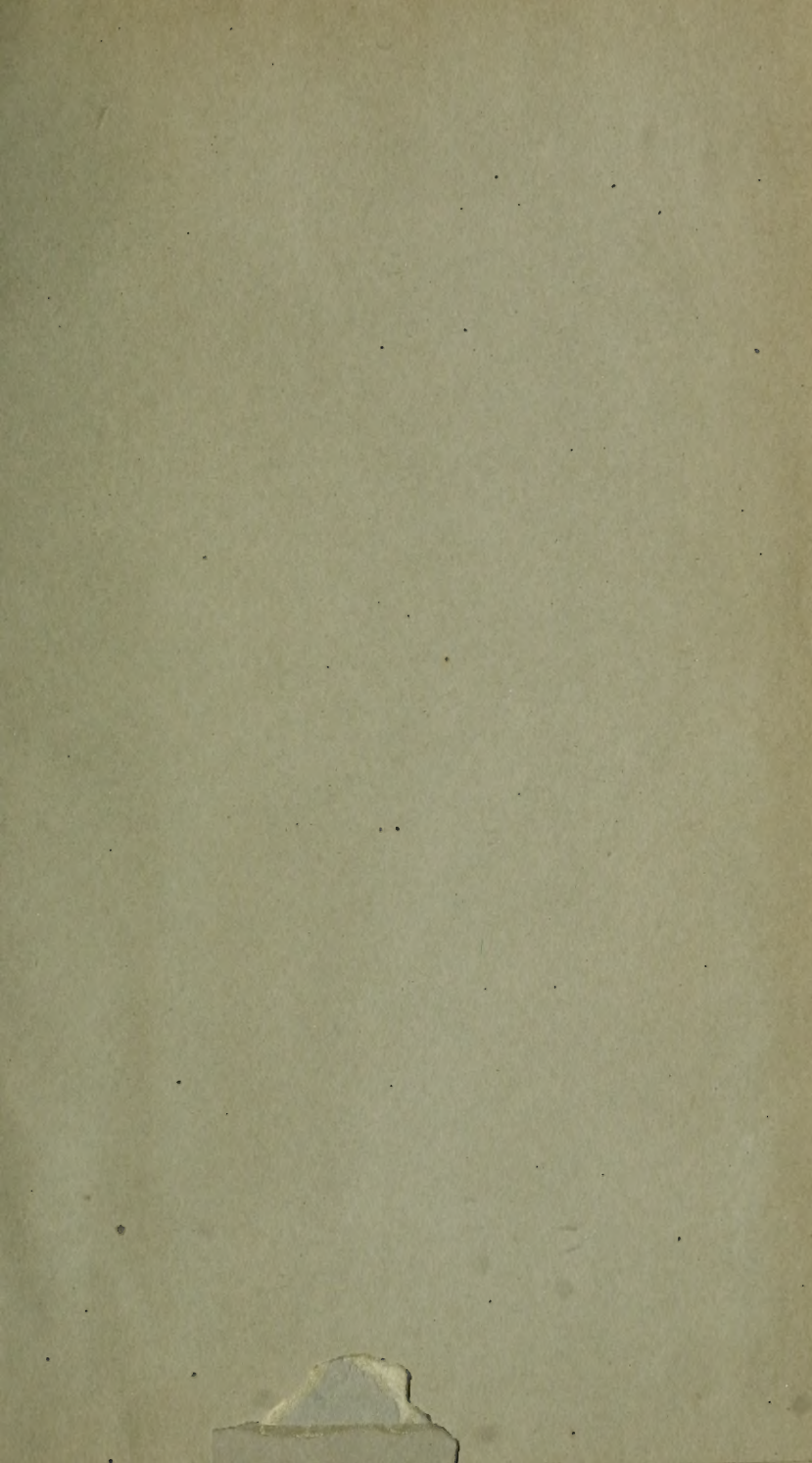
Dr Alexander Patterson agreed in what had been said about the necessity of constitutional treatment. The affection was generally observed in connection with a foul tongue. Hygienic treatment was generally preferable to local applications.

Dr M'Phie said that his attention had been drawn to the large number of these cases which were connected with a dyspeptic condition. With regard to the application of bromide of potassium, it was difficult to apply

it to the part of the pharynx above the soft palate. The nose douche enabled them to reach that part. It was noticeable that in uncomplicated cases of chronic pharyngeal catarrh there was an absence of cough.

The President pointed out that the discussion had gone beyond the limits indicated by Dr Foulis's paper. That paper, it would be observed, expressly excluded all acute cases; and it certainly had no reference to adenoid growths of the pharynx. He had spoken of granular inflammation, which often became very chronic. As one who had given great attention to cures of throat disease, he agreed with many of the conclusions of the paper. At the same time, he must take exception to the constant use throughout the paper of one little word. That word was "the," as immediately preceding "Dispensary for Diseases of the Throat." Dr Foulis ignored the fact that in addition to the institution with which he was connected, there were in Glasgow other two dispensaries for the treatment of such cases. Like many other local diseases, this affection was often complicated with diseases of a constitutional nature. If they neglected the constitutional derangement they could not cure the local disease. But they could not give up local treatment. He had not tried the heroic treatment recommended by Dr Foulis, though he did not go the length of saying it was wrong. With less severe measures than the actual cautery he had had success. He treated the general and local disease at the same time. As local applications, the bromides were good; and he thought Dr Begbie's suggestion to let over a little was sagacious. The spray apparatus was often of essential service in these affections.

Dr Foulis, in reply, stated that he had excluded any reference to constitutional treatment as beyond the range of his paper. Piles were almost always associated with a dyspeptic condition, yet that did not prevent them from giving local treatment. He would give purgatives if he saw necessity for it. But would purgatives remove or thin away a thickened condition of the mucous membrane of the pharynx? It would not, he ventured to say, produce absorption of a single cell of the thickened tissue. He had as little faith in the nitrate of silver as Mr Reid, and had expressed his sense of failure of that treatment in his paper. The results from it were much more severe than from the application of the actual cautery. After a reference to the labours of continental observers, Dr Foulis thanked the society for the reception given to his paper.



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